

RPC Transportation Advisory Committee
October 27, 2022
9:00-11:00 AM

RPC Offices

156 Water Street, Exeter, NH

Location: <https://goo.gl/maps/X9AvHrcfy2SivYDx7>

Virtual Participation via Zoom

<https://us02web.zoom.us/j/87132816551?pwd=ZHN5dGx3Z09RalhWYXFndU5yZGF3Zz09>

The full zoom invitation is on page 2

Agenda

1. Introductions
2. Minutes of 9/22/22 Meeting (**Attachment #1**) — **[Motion Required]** (5 minutes)
3. HSIP Performance Targets for 2023 (**Attachment #2**) — **[Motion Required]** – Dave Walker (30 Minutes)
4. Ten Year Plan Project Selection – Selecting Candidate Projects for NHDOT Review (Attachment #3) – [Motion Required] – Dave Walker (45 minutes)
5. NH Seacoast Greenway Community Connections Design Workshops – Scott Bogle (30 Minutes)
6. Project Updates – Dave/Scott (10 minutes)
 - Upcoming CMAQ Funding Round (5 minutes)
7. Open discussion/Comments

TAC MEETING SCHEDULE For 2022 (Next meeting highlighted)

January 27	April 28	July 28	October 27
February 24	May 26	August 25	December 8***
March 24	June 23	September 22	

***Off Schedule

Rockingham Planning is inviting you to a scheduled Zoom meeting.

Topic: RPC Transportation Advisory Committee Meeting

Time: Dec 2, 2021 09:00 AM Eastern Time (US and Canada)

Jun 23, 2022 09:00 AM

Jul 28, 2022 09:00 AM

Aug 25, 2022 09:00 AM

Sep 22, 2022 09:00 AM

Oct 27, 2022 09:00 AM

Dec 8, 2022 09:00 AM

Please download and import the following iCalendar (.ics) files to your calendar system.

Monthly: https://us02web.zoom.us/meeting/tZMsdOugrz0vH9VvWNQsRaYgK-Qy5wPMF_h/ics?icsToken=98tyKuGvrzgoEtWTtRyGRpwEBYjCa_zmCFYgvpriijLMhNAUALPEckPA6sqB-j9

Join Zoom Meeting

<https://us02web.zoom.us/j/87132816551?pwd=ZHN5dGx3Z09RalhWYXFndU5yZGF3Zz09>

Meeting ID: 871 3281 6551

Passcode: 201102

One tap mobile

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+19292056099,,87132816551#,,,,*201102# US (New York)

Dial by your location

+1 312 626 6799 US (Chicago)

+1 929 205 6099 US (New York)

+1 301 715 8592 US (Washington DC)

+1 346 248 7799 US (Houston)

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

Meeting ID: 871 3281 6551

Passcode: 201102

Find your local number: <https://us02web.zoom.us/u/kpm67IGdD>

MINUTES
Rockingham Planning Commission
MPO Technical Advisory Committee
July 28, 2022

RPC Offices
156 Water Street, Exeter
In Person and Virtual participation via Zoom
Recording Available Here: <https://youtu.be/49MfDMBBU7s>

Members Present: R. McDermott, Chairman (Hampton Falls); D. Sieglie (Rye); M. Scruton (Greenland); P. Coffin (Kingston); J. Hale (Hampton); E. Eby (Portsmouth); C. Cross (Newington); S. Connors (Stratham); R. Nichols (COAST); T. White (NHDES); L. St. John (NHDOT)

Non-voting Members: L. Levine (FHWA)

Staff: D. Walker (Transp Mgr/Assistant Director); S. Bogle (Sr. Transp Plnr)

- 1. Introductions [not recorded]:** Chairman McDermott welcomed those in attendance and Roll Call Attendance was taken.
- 2. Minutes of 7/23/22 TAC Meeting [not recorded]**

*Coffin moved to approve the Minutes of the July 28, 2022 meeting as presented; Eby Seconded. Roll Call Vote was taken. St. John abstained. **SO VOTED.***

- 3. Region 8/9 Coordinated Human Services Transit Plan – S. Bogle [0:33 – 38:07]**

Working with Southern New Hampshire Regional Planning Commission to update the Coordinated Human Services Transit Plan for the Greater Manchester and Greater Derry-Salem regions. Updated every 5 years typically and this update is the first time the two regions have been merged as it was required after CART merged with the Manchester Transit Authority. Bogle covered the purpose and contents of the plan as well as the changes that have occurred in the region since the last update. Existing services are defined, transit needs are identified, and recommendations are made regarding enhancements to services. Questions and discussion followed. *Nichols moved to recommend approval of the draft plan to the MPO Policy Committee with edits discussed; Coffin seconded. **SO VOTED.***

- 4. Update on Selection of Project for Estimate Development – D. Walker [38:07 – 56:50]**

Walker provided a short review of the project selection process to date and updated the committee on the current status of the work. The work order for the development of cost and scope estimates was completed in August and the consultant began work in early September. Estimates for all 8 “short listed” projects will be completed in time for the October TAC meeting.

5. Project Updates: Walker/Bogle [56:50-1:31:00]

- Congestion Mitigation Air Quality Program (CMAQ): Walker covered the purpose of CMAQ and the types of projects eligible for the program. He also covered the current understanding of the parameters of the expected funding round this year. It is anticipated that forthcoming guidance may deviate from the information presented at the meeting and the TAC will be updated as more information becomes available. Short discussion followed.
- Safe Streets and Roads for All (SS4A): Walker covered the basic information on the SS4A program and the proposal that RPC jointly submitted with SRPC, SNHPC, and NRPC.
- Highway Safety Improvement Program (HSIP): Walker covered the purpose of HSIP and the NHDOT Road Safety Audits (RSA) process.
- Age Friendly Communities Project: Bogle stated that RPC is soliciting for communities to participate in the year two assessments. Bogle discussed the contents of the assessments in response to a question from a TAC member.
- NH Seacoast Greenway: Bogle updated the TAC with information on two design workshops that will be held in October to consider options for trailheads and other aspects of the trails. He also discussed community meetings that have been held discussing needs and design options.

6. Other Items/Comments:

Additional materials will be sent to the TAC after the meeting.

Meeting adjourned at approximately 10:45 a.m.

Respectfully submitted,
David Walker, Recording Secretary

Rockingham Planning Commission

2023 Transportation Safety (HSIP) Performance Targets

Draft – 10/18/2022

Rockingham Planning Commission
Adopted: [Date]

Background

The Federal Highway Administration (FHWA) implemented the final rule on the Highway Safety Improvement Program (HSIP) effective April 14, 2016. This regulation ([23 CFR 490](#)) requires that five safety related performance targets must be set and published annually by State DOTs by August 31st and MPOs within 180 days after the state targets are established. This target setting is intended to coordinate the efforts of the State Department of Transportation (NHDOT), State Office of Highway Safety (OHS), and Metropolitan Planning Organizations (MPO), as well as the specific planning efforts of the NHDOT State Strategic Highway Safety Plan (SHSP), OHS Highway Safety Plan (HSP), and the Highway Safety Improvement Program (HSIP), into measures that help to assess the safety performance of the transportation system. The federally required targets assess and report safety improvements in five ways:

1. **Number of Fatalities:** The total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year.
2. **Rate of Fatalities:** The ratio of total number of fatalities to the number of vehicle miles traveled (VMT, in 100 Million VMT) in a calendar year.
3. **Number of Serious Injuries:** The total number of persons suffering at least one serious injury in a motor vehicle crash during a calendar year.
4. **Rate of Serious Injuries:** The ratio of total number of serious injuries to the number of VMT (in 100 Million VMT) in a calendar year.
5. **Number of Non-Motorized Fatalities and Non-motorized Serious Injuries:** The combined total number of non-motorized fatalities and non-motorized serious injuries involving a motor vehicle during a calendar year.

In addition, the MPOs in New Hampshire are tracking additional safety metrics that are not required by the Federal rule. To date, this includes a single measure:

1. **Motorcycle Fatalities:** The number of fatal crashes involving motorcycles.

Target Development

States establish Highway Safety Improvement Program (HSIP) targets and report them for the upcoming calendar year in the HSIP annual report that is submitted to FHWA by August 31st each year. Targets are applicable to all public roads, regardless of functional classification or ownership. The targets established for number and rate of fatalities, and number of serious injuries must be identical to those established for the National Highway Transportation Safety Agency (NHTSA) Highway Safety Grant program in the annual Highway Safety Plan (HSP). The state has the option to also establish any number of urbanized area targets and a non-urbanized area target for the purposes of evaluating and reporting measures. However, those sub-state targets are not included in the significant progress determination that will be made by FHWA.

In New Hampshire, the process used to develop the required safety measures included in the annual HSP formed the basis for the establishment of the five FHWA mandated targets by NHDOT and the MPOs. This involved coordination and consultation between the New Hampshire Departments of Transportation and Safety, as well the four MPOs in the state. Currently available fatality, serious injury, and volume data were analyzed to establish 2013-2021 conditions in terms of total fatalities, fatality rates, total serious injuries, serious injury rates, as well as total non-motorized fatalities and serious injuries. Five year rolling averages were developed from these values and utilized to compute projected values for 2023.

State Targets

Figure 1 below shows the New Hampshire HSIP targets for 2023. The figures in the “Supporting Data and Analysis” section of this document show state and regional data supporting the targets for the five required measures as well as charts showing historic values, 5-year averages, and projected 2023 values for each measure.

Figure 1: State of NH 2023 HSIP Targets

Measure	2021 Values		Trend Based Target	2023 Targets		
	Yearly	Five-Year Average		Current Trend	Desired Trend	2023 Target
Number of Fatalities	118	114.2	115.2			111.6
Fatality Rate per 100 Million VMT	0.898	0.861	0.861			0.857
Number of Serious Injuries	482	466.4	472.7			466.4
Serious Injury Rate per 100 Million VMT	3.670	3.532	3.559			3.532
Non-Motorized Fatalities and Serious Injuries	39	41.6	37.0			33.2

MPO Targets

For 2023, the MPO is agreeing to support the State of New Hampshire HSIP Targets in all five mandated areas. In doing so, the MPO is agreeing to:

- Work with the State and safety stakeholders to address areas of concern for fatalities or serious injuries within the metropolitan planning area.
- Coordinate with the State and include the safety performance measures and HSIP targets for all public roads in the metropolitan area in the MTP (Metropolitan Transportation Plan).
- Integrate into the metropolitan transportation planning process the safety goals, objectives, and performance measures and targets described in other State safety transportation plans and processes such as applicable portions of the HSIP, including the SHSP.
- Include a description in the TIP (Transportation Improvement Program) of the anticipated effect of the TIP toward achieving HSIP targets in the MTP, linking investment priorities in the TIP to those safety targets.

Motorcycle Fatalities

The four New Hampshire MPOs have mutually agreed to track motorcycle fatalities as a performance measure and Fatality Analysis Reporting System (FARS) data is utilized for this purpose. As the State and MPO are not required to establish targets by FHWA, the state is not establishing targets in this area and so the MPO must establish its own. Since 2010, the MPO region has averaged 3 motorcycle fatalities per year and this has kept the 5-year average nearly flat at around 2.8 since 2015. In 2019, there was a single fatality which caused a dip in the 5-year average. In 2020 there were 3 motorcycle fatalities in the region and this, combined with higher numbers in 2017 and 2018, has resulted in an upward trend in the 5-year average. Statewide, motorcycle fatalities were 23% higher in 2021 than in 2020 although in the RPC region there was one less (3 to 2). Assuming one motorcycle fatality in both 2022 and 2023 would reduce the 5-year average to **1.6 and this is the recommended 2023 target for the 5-year average Motorcycle fatalities**. Additional supporting data is included in the “Supporting Data and Analysis” section of this document.

Figure 2: Rockingham Planning Commission Additional 2022 Safety Performance Targets

Measure	2021 Values		Trend Based Target	2023 Targets		
	Yearly	5-Year Average		Current Trend	Desired Trend	2023 Target
Number of Motorcycle Fatalities	2	2.8	2.9			1.6

Supporting Data and Analysis

Data for the establishment of these measures is provided from three sources:

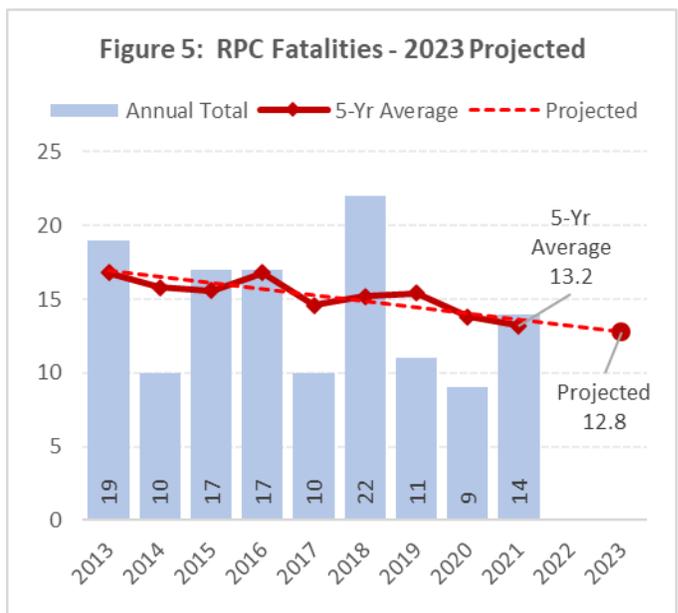
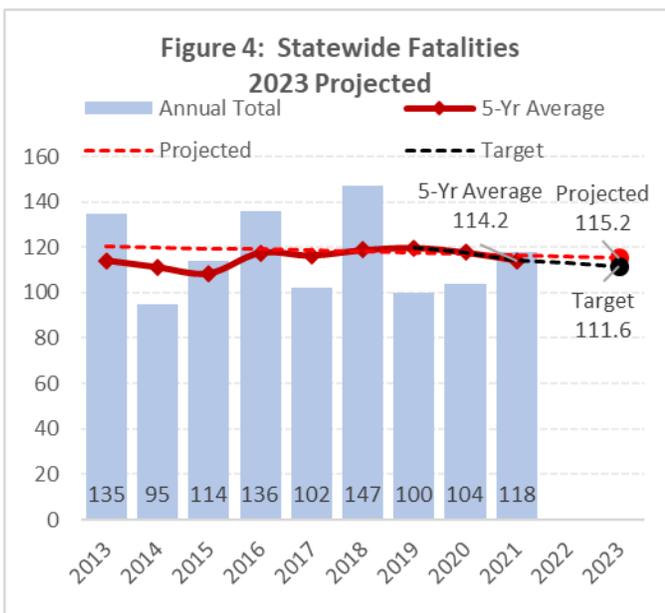
- Fatality Analysis Reporting System (FARS):** FARS Annual Report File or Final data is utilized to provide information on fatal crashes in the state and to identify those that have occurred within the MPO region. Five-year rolling averages are computed to provide a better understanding of the overall data over time without discarding years with significant increases or decreases, as well as to provide a mechanism for regressing fatalities to the mean and accounting for their essential random nature in location and time.
- State Motor Vehicle Crash Database:** Data collected and maintained by the NH Department of Safety is utilized to determine the number of serious injury crashes in the state (currently those classified as “Suspected Serious Injury” on the DSMV159, 2018). This includes injuries that involve severe lacerations, broken or distorted limbs, skull fracture, crushed chest, internal injuries, unconscious when taken from the accident scene, or unable to leave the accident scene without assistance. This data is necessary to identify the total number of serious injuries from traffic crashes in New Hampshire and the MPO region specifically.
- Highway Performance Monitoring System (HPMS):** State VMT data is collected by the Department of Transportation and aggregated into a dataset for the state. VMT data can be calculated for MPO regions and individual communities. The VMT data is combined with FARS data to calculate rate of fatalities (deaths per 100 million VMT) and with the State Motor Vehicle Crash data to calculate the rate of serious injuries (serious injuries per 100 million VMT).

Number of Fatalities

Statewide, there was a 10% increase in Vehicle Miles of Travel (VMT) which has returned volumes to levels closer to those seen pre-pandemic (5% decrease from 2019) and along with the higher volumes there was a 13% increase in the number of motor vehicle crash related fatalities in 2021. The number of fatalities in the state has varied substantially since 2012 averaging a $\pm 23\%$ change from year to year (± 27 deaths) (**Figures 3 & 4**). Since the low in 2015, the five-year rolling average increased through 2019, illustrating a return to a generally higher numbers of fatalities however lower numbers in 2019 and 2020 have returned to a declining trend. Basing a trend line on the five-year averages indicates an increase in the five-year rolling average number of fatalities from the current 114.2 to 115.2 in 2023. Holding fatalities in 2022 and 2023 to 2021 levels (118 fatalities) will produce a 5-year average of 111.6 and NHDOT has established this as the state target for 2023. Fatalities in the RPC region continued to be lower than the 2018 peak of 22 with 14 during 2021 (**Figures 3 & 5**). After increasing to 15.4 in 2019, the five-year average fatalities decreased to 13.2 for 2017-2021. The overall trend is expected to result in declining fatalities over time with a five-year average for the 2019-2023 period expected to be at 12.8 deaths.

Figure 3: Fatalities

Year	Annual Crash Fatalities		5-Year Period	5-Year Rolling Average Crash Fatalities	
	New Hampshire	MPO Region		New Hampshire	MPO Region
2012	108	21			
2013	135	19	2009-2013	114.2	16.8
2014	95	10	2010-2014	111.2	15.8
2015	114	17	2011-2015	108.4	15.6
2016	136	17	2012-2016	117.6	16.8
2017	102	10	2013-2017	116.4	14.6
2018	147	22	2014-2018	118.8	15.2
2019	101	11	2015-2019	120.0	15.4
2020	104	9	2016-2020	117.8	13.8
2021	118	14	2017-2021	114.2	13.2

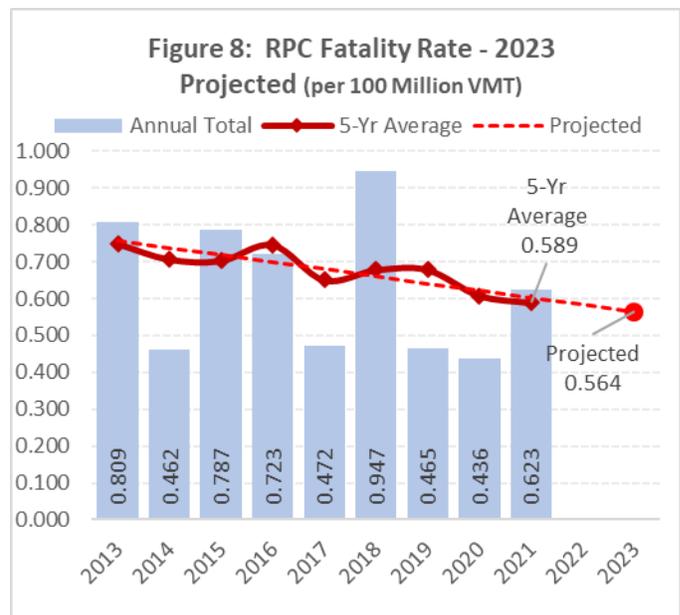
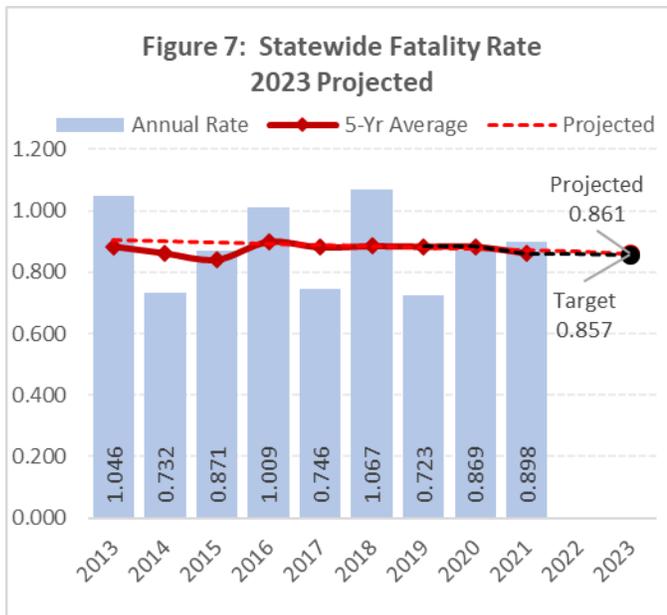


Rate of Fatalities

The increase in fatalities offset the increase in auto travel during 2021 resulted in an increase in the annual Fatality Rate for the state from 0.869 to 0.898 fatalities per 100 Million VMT. While generally declining over time, the statewide five-year average rate of fatalities has varied little from the 0.884 fatalities per 100 million VMT seen during the 2009-2013 timeframe (**Figures 6 & 7**). The projected rate for 2019-2023 is flat from the current period at 0.861 however that would require significantly higher than usual rates for 2022 and 2023 and so NHDOT is setting a slightly lower target at 0.857 fatalities per 100 Million VMT. While the annual rate for the MPO region increased significantly, it remains lower than the statewide rate and the five-year average continues to decline over time (**Figures 6 & 8**). For 2017-2021, the regional rate of fatalities per 100 million VMT decreased to 0.589 reflecting the longer term trend of declining rates. This results in a projected rate for the 2019-2023 timeframe of 0.564 deaths per 100 million VMT.

Figure 6: Fatality Rates

Year	100 Million Vehicle Miles of Travel (VMT)		Fatality Rate per 100 Million VMT		5-Year Period	5-Year Average Fatality Rates per 100 Million VMT	
	New Hampshire	MPO Region	New Hampshire	MPO Region		New Hampshire	MPO Region
2012	128.94	22.05	0.838	0.952			
2013	129.03	23.48	1.046	0.809	2009-2013	0.884	0.750
2014	129.70	21.65	0.732	0.462	2010-2014	0.861	0.707
2015	130.94	21.61	0.871	0.787	2011-2015	0.839	0.703
2016	134.76	23.53	1.009	0.723	2012-2016	0.899	0.747
2017	136.81	21.18	0.753	0.472	2013-2017	0.881	0.650
2018	137.76	23.24	1.074	0.947	2014-2018	0.885	0.678
2019	138.57	23.69	0.729	0.464	2015-2019	0.884	0.679
2020	119.70	20.66	0.869	0.436	2016-2020	0.882	0.608
2021	131.33	22.46	0.898	0.623	2017-2021	0.861	0.589

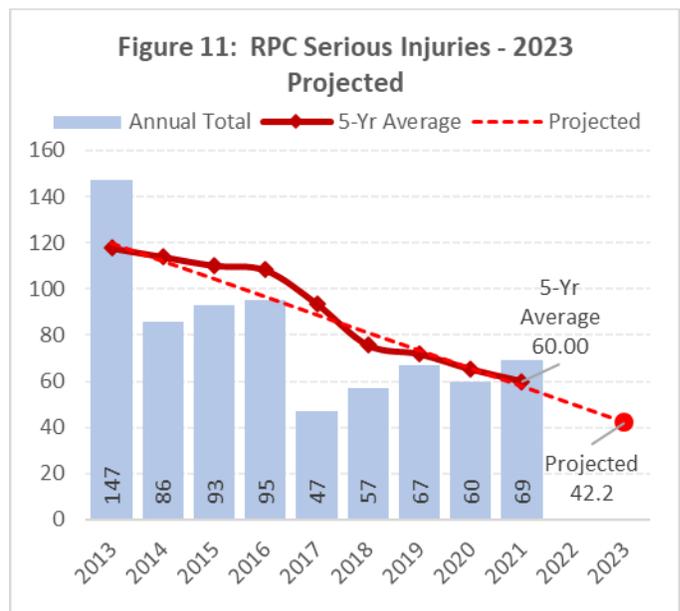
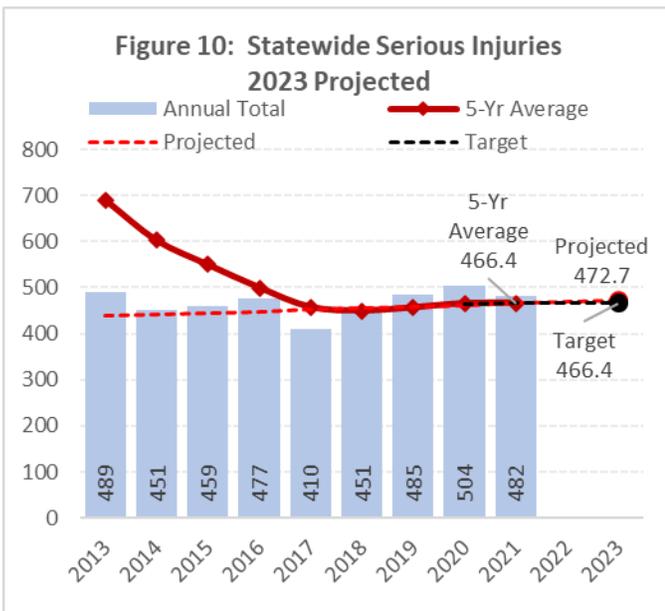


Serious Injuries

The state crash data shows some variation from year to year but has generally indicated a declining trend in the number of serious injuries at both the State (**Figures 9 & 10**) and MPO level (**Figures 9 & 11**). 2020 had the highest number at the state level since 2012 and 2021 shows a decrease from that number. At the regional level, 2021 had the highest number of serious injuries since 2016 but was still significantly lower than the numbers experienced in 2016 and earlier. The five-year average declined at the state level from 2012 to 2017 but has levelled off in the years since and turned slight upward to get to the 466.4 averaged for the 2017-2021 period. NHDOT has established that number as the Serious Injury target for 2023 as well. At the regional level, the five-year average continues to decline and is currently more than 40% lower than the 2012-2016 period despite the higher than usual number of serious injuries in 2021. This rate is projected to continue to decline however it would take serious injuries decreasing to 10 per year to reach the 2019-2023 five-year average projected from the trend analysis.

Figure 9: Serious Injuries

Year	New Hampshire Serious Injuries	MPO Region Serious Injuries	5-Year Period	5-Year Rolling Average Serious Injuries	
				New Hampshire	MPO Region
2012	623	120			
2013	489	147	2009-2013	553.8	117.8
2014	451	86	2010-2014	510.6	114.0
2015	459	93	2011-2015	496.8	110.2
2016	477	95	2012-2016	499.8	108.2
2017	410	47	2013-2017	457.2	93.6
2018	451	57	2014-2018	449.6	75.6
2019	485	67	2015-2019	456.4	71.8
2020	504	60	2016-2020	465.4	65.2
2021	482	69	2017-2021	466.4	60.0

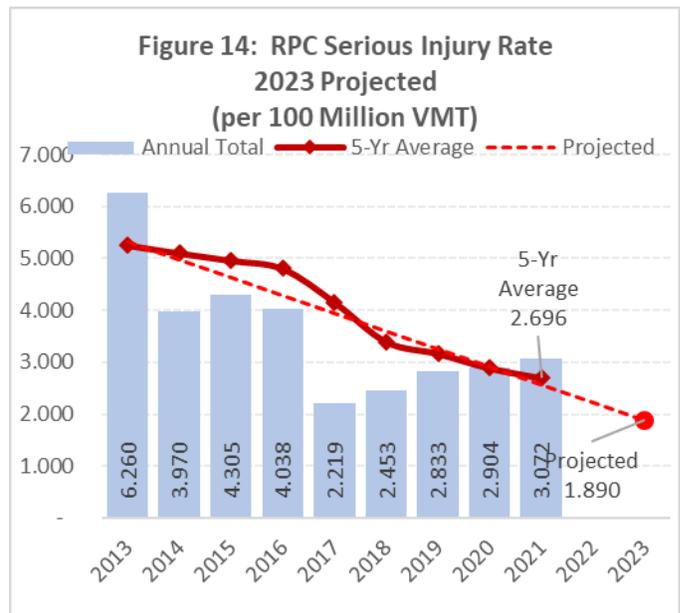
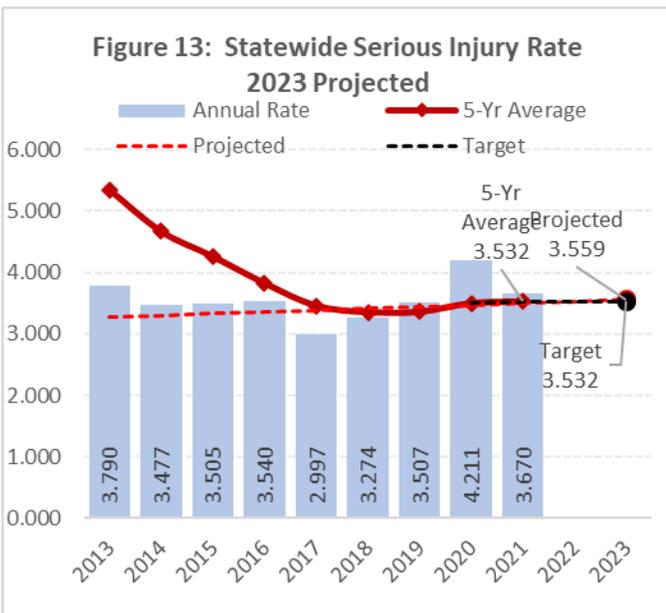


Rate of Serious Injuries

A decrease in the number of serious injuries and an increase in VMT at the state level caused a decline in the rate in 2021 to 3.67 serious injuries per 100 million VMT. The five-year average continued to increase slightly (**Figures 12 & 13**) as overall numbers of serious injuries remain higher than the low observed in 2017 and this results in a projected statewide 2019-2023 five-year average of 3.559 serious injuries per 100 million VMT. NHDOT has established the 2023 target at 3.532 serious injuries per 100 Million VMT which is level with the 2021 observed rate and lower than the projected trend. Regionally (**Figures 12 & 14**), the annual serious injury rate continued to increase and has gone above 3 for the first time since 2016. The five-year average continues to decline as the overall number of serious injuries remains about a third lower than 2016 and earlier. Projecting the five-year average for the 2019-2023 period results in a serious injury rate of 1.89 per 100 million VMT for the region however the annual rate would need to drop to 0.25 serious injuries per 100 million VMT to meet that trend.

Figure 12: Serious Injury Rate

Year	100 Million Vehicle Miles of Travel (VMT)		Serious Injury Rate per 100 Million VMT		5-Year Average Serious Injury Rates per 100 Million VMT		
	New Hampshire	MPO Region	New Hampshire	MPO Region	5-Year Period	New Hampshire	MPO Region
2012	128.94	22.05	6.352	5.442			
2013	129.03	23.48	5.898	6.260	2009-2013	4.287	5.255
2014	129.70	21.65	4.919	3.970	2010-2014	3.954	5.103
2015	130.94	21.61	4.636	4.305	2011-2015	3.847	4.961
2016	134.76	23.53	4.964	4.038	2012-2016	3.829	4.803
2017	136.81	21.18	3.033	2.219	2013-2017	3.462	4.158
2018	137.76	23.24	3.492	2.453	2014-2018	3.359	3.397
2019	138.57	23.69	3.536	2.828	2015-2019	3.365	3.168
2020	119.70	20.66	4.280	2.904	2016-2020	3.506	2.888
2021	131.33	22.46	3.670	3.072	2017-2021	3.532	2.696

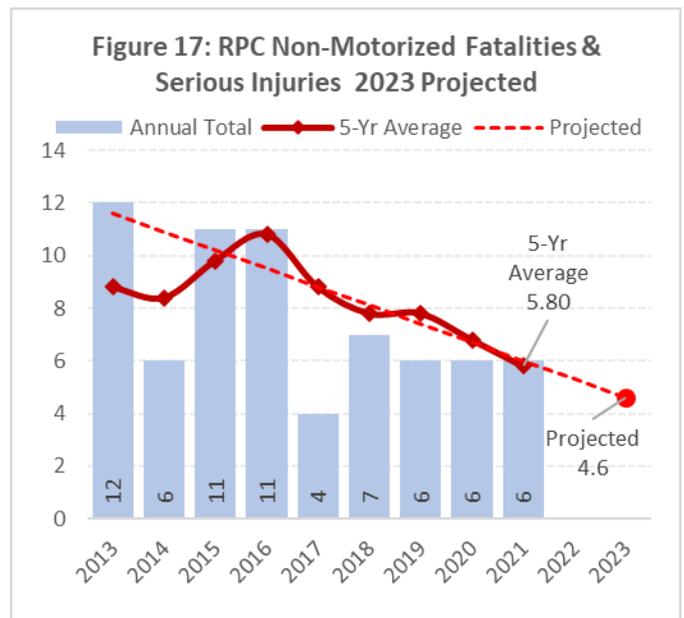
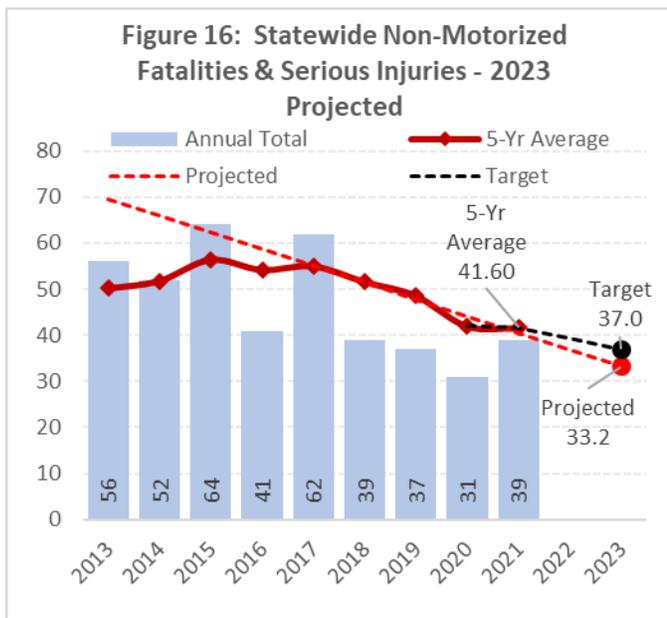


Non-motorized Fatalities and Serious Injuries

Non-motorized crash data is pulled from FARS and from state crash records. Rates are not established for non-motorized crashes as the overall volume of bicycle and pedestrian travel is unknown. Statewide, non-motorized fatalities and serious injuries continued to be lower than the peaks seen in 2015 and 2017 (**Figures 15 & 16**) however there was an increase from 2020 to 2021. The five-year average continues to decline although the projected 2019-2023 average of 33.2 fatalities and serious injuries is not a viable target. For that reason, NHDOT has established a target of 37.0 non-motorized fatalities and serious injuries. Regionally, there were 6 non-motorized fatalities and serious injuries for the third year in a row however there were more fatalities in 2021 than in either of the first two years (**Figures 15 & 17**). The five-year average declined as well. Using a linear projection, the five-year average for the 2019-2023 period is expected to continue the downward trend to 4.6 non-motorized fatalities and serious injuries per year for the region. This would require an average of 2.5 or less non-motorized fatalities and serious injuries in the region for each of the next two years which is significantly lower than current observed values.

Figure 15: Non-Motorized Fatalities & Serious Injuries

Year	New Hampshire			MPO Region			5-Year Rolling Average Non-Motorized Fatalities & Serious Injuries		
	Non-Motorized Crashes			Non-Motorized Crashes			5-Year Period	New Hampshire	MPO Region
	Fatalities	Serious Injuries	Total	Fatalities	Serious Injuries	Total			
2012	10	48	58	3	11	14			
2013	20	36	56	5	7	12	2009-2013	50.2	8.8
2014	16	36	52	0	6	6	2010-2014	51.8	8.4
2015	14	50	64	2	9	11	2011-2015	56.4	9.8
2016	21	20	41	1	10	11	2012-2016	54.2	10.8
2017	15	47	62	0	4	4	2013-2017	55.0	8.8
2018	14	25	39	5	2	7	2014-2018	51.6	7.8
2019	10	27	37	0	6	6	2015-2019	48.6	7.8
2020	11	20	31	1	5	6	2016-2020	42.0	6.8
2021	10	29	39	2	4	6	2017-2021	41.6	5.8

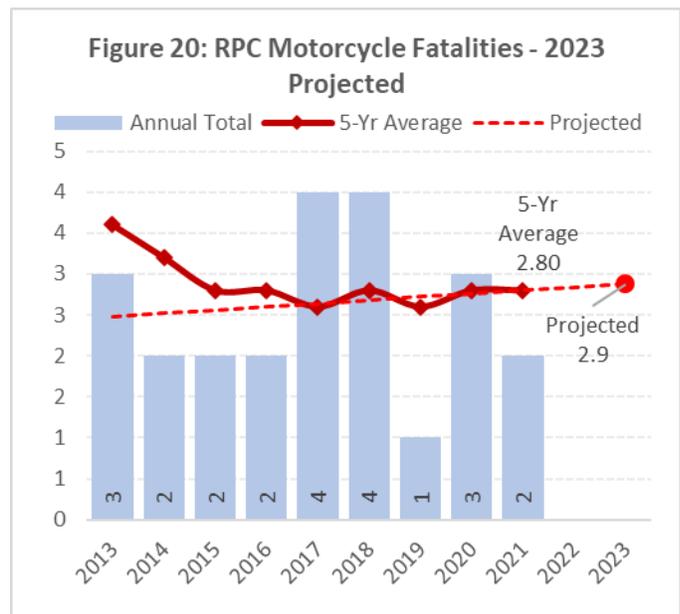
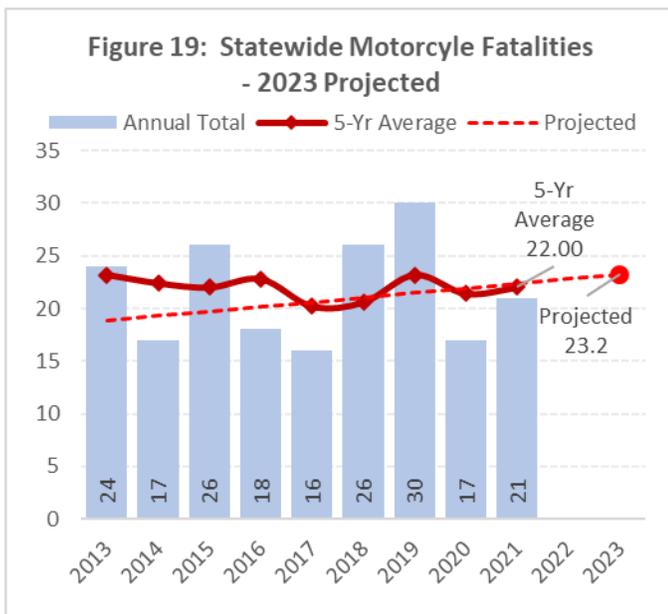


Motorcycle Fatalities

The FARS dataset provides the data necessary for identifying the total number of motorcycle crash fatalities in New Hampshire (*Figures 18 & 19*) and for the MPO region (*Figures 18 & 20*). No fatalities rates are set as information on motorcycle-specific VMT is not available. The State does not set performance targets for motorcycle fatalities and that data is included for context only. Overall, motorcycle fatalities increased statewide in 2021 over 2020 numbers but not as high as seen in 2018 or 2019. There were two motorcycle fatalities in the MPO region which is down from 2020. The five-year average number of fatalities increased slightly statewide to 22.0 and stayed steady for the region at 2.8. The projected value for the 2019-2023 five-year period anticipates a increase in fatalities statewide with an expected 23.2 average. At the regional level, the five-year average fatalities are projected to increase to 2.9 however keeping annual totals at or below values seen for the last few years will ensure that the projected increase does not become an actual increase.

Figure 18: Motorcycle Fatalities

	Annual Motorcycle Crash Fatalities		5-Yr Period	5-Year Rolling Average Crash Fatalities	
	New Hampshire	MPO Region		New Hampshire	MPO Region
2012	29	5			
2013	24	3	2009-2013	23.20	3.60
2014	17	2	2010-2014	22.40	3.20
2015	26	2	2011-2015	22.00	2.80
2016	18	2	2012-2016	22.80	2.80
2017	16	4	2013-2017	20.20	2.60
2018	26	4	2014-2018	20.60	2.80
2019	30	1	2015-2019	23.20	2.60
2020	17	3	2016-2020	21.40	2.80
2021	21	2	2017-2021	22.00	2.80



Memorandum

DATE: October 18, 2022
TO: MPO Transportation Advisory Committee
FROM: David Walker, Assistant Director
RE: Project Selection for the Ten Year Plan

The next phase in the Ten Year Plan project prioritization process is for the MPO to identify a fiscally constrained list of candidate projects to be submitted to NHDOT for engineering and cost review prior to the MPO setting final priorities in February/March next year.

Prioritizing projects for the Ten Year Plan involves determining feasibility, ensuring projects are supported locally and regionally, checking eligibility for federal funding, and applying the project selection criteria to rank those projects that are feasible, supported, and eligible. The MPO Long Range Transportation Plan contains 169 total projects including those submitted by communities this summer. Of these projects, 50 are already included in the State Ten Year Plan or Transportation Improvement Program and don't need to be included in this process. Checking eligibility, support, and feasibility identified 20 projects that are ineligible for federal funding, lack community support, are being funded via other methods, or are simply not needed in the next ten years. As shown in **Table 1** below, this leaves 99 projects, distributed into three groups based on scale (Local, Regional, Inter-Regional), to be ranked and considered for the Ten Year Plan. Each of those projects has been scored against the statewide project selection criteria using the weights set by the TAC on June 22, 2022.

Table 1: RPC Long Range Transportation Projects

Total Projects	169		
Already in the Ten Year Plan	50		
Not eligible/feasible/Needed	20		
Scored for Ten Year Plan	99		
		Local	Regional
Categorized	40	34	Inter-Regional 25

The top five projects from each category were included in the **Preliminary Candidate Project List** worksheet discussed by TAC at the July 28, 2022 meeting and those 15 projects were reduced to a list of eight for possible development of scope and cost estimates by RPC's engineering consultants. The engineers have been working on those scope and cost estimates

since early September and the results are summarized in the table below with the more detailed estimates attached. Included with the detailed estimates are a memo providing a summary of each project as well as the details of the conceptual estimates. The final page of each also includes the list of assumptions that form the basis of the costs and scope.

Group	Project	Est. Base Cost	Est. Inflated Cost
Local			
	Maplewood Avenue Culvert in Portsmouth	\$12,200,576	\$16,520,000
	NH 102 at Blueberry Hill in Raymond	\$561,226	\$760,000
	Stratham Circle (NH 108/NH 33)	\$8,879,962	\$12,000,000
	Local Sub-total	\$21,641,764	\$29,280,000
Regional			
	High Street (NH 27) in Hampton	\$2,473,976	\$3,350,000
	Portsmouth Avenue (NH 108) in Stratham	\$1,802,859	\$2,440,000
	Ashworth Avenue (NH 1A) in Hampton	\$3,808,694	\$5,160,000
	Regional Sub-total	\$8,085,529	\$10,950,000
Inter-Regional			
	Portsmouth Traffic Circle (US1 Bypass)	\$6,193,550	\$8,390,000
	US 1 in Hampton	\$65,729,814	\$89,030,000
	Inter-Regional Sub-total	71,923,364	\$97,420,000
	Total	\$101,650,657	\$137,650,000

Other important considerations:

- Funding the top ranked project from all three categories would cost roughly 350% of our regional target (\$8,055,824) for the two years.
- The inflated costs still need to be adjusted to some degree. All are currently inflated to 2033 but NHDOT review usually indicates a year that they would program construction and engineering and inflation will be adjusted accordingly at that time. Indirect costs also need to be included for any project that will be managed by NHDOT.
- Before being constructed, each project will go through an alternatives analysis and design process that will refine the scope and costs. Scopes listed could change considerably over the course of implementation and those listed are a starting point.
- As an alternative to the Ten Year Plan, the Maplewood Avenue project is eligible for NHDOT's Municipal Bridge Program. Funding for that program has been severely limited in the past. The site may also be eligible for USDOT's National Culvert Removal, Replacement, and Restoration Grants or the PROTECT program to offset some or all of the high cost.
- The two sea-level rise resilience projects may be premature (High Street, US 1). While the STCVA study and plan identified needs and possible options for these areas, there is significant work needed to determine the best approach for addressing flooding at each location, including, for High Street at least, whether a transportation project is viable alternative at all. In addition, the cost of the US 1 Project through the Hampton-Seabrook

Estuary is clearly well beyond what can be accomplished via RPC's "Regional Target" funding amount. The alternative utilized for this analysis is likely one of the more expensive options and it provides a useful data point to move forward with further analysis of how to address sea-level rise issues at the site.

- NH 102 and Blueberry Hill Road intersection in Raymond may be eligible for the Highway Safety Improvement Program and RPC will be working with Raymond to investigate that option this fall.
- Portsmouth Avenue in Stratham may be an eligible CMAQ program project as it will likely result in some reduced auto trips that are replaced with bike/pedestrian trips. Combining that with some traffic signal improvements may make it a more robust project as well.
- The Maplewood Ave Culvert, Stratham Circle, and US 1 projects are all larger than the regional target allocation making them challenging to fund. These projects will be submitted to NHDOT for informational purposes only at this time to provide them with our assessments.

	Draft Rank	Project	Est. Base Cost	Est. Inflated Cost
Submit for DOT Review	1	Portsmouth Traffic Circle (US1 Bypass)	\$6,193,550	\$8,390,000
	2	NH 102 at Blueberry Hill in Raymond	\$561,226	\$760,000
	3	Ashworth Avenue (NH 1A) in Hampton	\$3,808,694	\$5,160,000
	4	Portsmouth Avenue (NH 108) in Stratham	\$1,802,859	\$2,440,000
	5	High Street (NH 27) in Hampton	\$2,473,976	\$3,350,000
		Subtotal	\$14,840,305	\$20,100,000
Submit for Information Only	6	Maplewood Avenue Culvert in Portsmouth	\$12,200,576	\$16,520,000
	7	Stratham Circle (NH 108/NH 33)	\$8,879,962	\$12,000,000
	8	US 1 in Hampton	\$65,729,814	\$89,030,000
		Subtotal	\$86,810,352	\$117,550,000
		Total	\$101,650,657	\$137,650,000

Recommended Action: Consider the draft Candidate Project List from staff and establish a TAC recommendation regarding the list of priority Ten Year Plan projects to submit to NHDOT for scope and cost review. This recommendation will go the MPO Policy Committee for final approval in November and will be submitted to NHDOT by November 11, 2022.



Memorandum

To: David Walker
Assistant Director
Rockingham Planning Commission

From: Stephen Haas, PE, PTOE

cc: Tim Roache

Date: October 17, 2022

Re: NHDOT Ten-Year Plan Conceptual Estimates

Hoyle, Tanner & Associates, Inc. (Hoyle Tanner) is pleased to submit this memorandum summarizing our services for the Rockingham Planning Commission (RPC) to prepare conceptual estimates for submission to the New Hampshire Department of Transportation (NHDOT) for inclusion in the State's Ten-Year Transportation Improvement Plan. The RPC selected eight transportation projects that are considered high priority to its member communities for Hoyle Tanner to evaluate. Estimates were prepared utilizing prior planning and conceptual design efforts or project descriptions provided by the RPC. Hoyle Tanner evaluated these concepts to confirm general feasibility and determine required construction elements; however, engineering design and analysis were not requested or performed. To confirm key assumptions for each project, Hoyle Tanner met with the RPC on 9/16/22 for concurrence prior to estimate development. All estimates include construction costs, engineering costs, and right-of-way acquisition costs (if applicable) to provide a total project opinion of probable cost. A 2.8% per year inflation rate was utilized to project current construction costs to the potential 2033 construction year, as agreed in the project scope. A description of proposed improvements, estimate assumptions, and opinion of probable cost for each location are provided below. Detailed opinions of probable cost are included in Appendix A.

MAPLEWOOD AVENUE CULVERT REPLACEMENT – PORTSMOUTH, NH

The existing culvert on Maplewood Avenue over North Mill Pond in Portsmouth is in poor condition, is susceptible to sea level rise, and requires either repair or replacement. Hoyle Tanner began an engineering study for the City of Portsmouth in June of 2020 to evaluate the need and cost for each of these options. While interim repairs may be required, the City's desire is to include the culvert in the Ten-Year plan for future replacement. As a detailed conceptual estimate was prepared as part of this effort, a new estimate was deemed to not be required, and the estimate was simply inflated to the 2033 construction year. The opinion of probable cost for the Maplewood Ave Culvert Replacement is \$16,520,000.

NH 102 AT BLUBERRY HILL ROAD IMPROVEMENTS – RAYMOND, NH

The need for safety improvements at the t-intersection of NH 102 and Blueberry Hill Road in Raymond was identified in the Town's Master Plan and further evaluated in the 2017 traffic study prepared by Greenman-Pedersen, Inc. The skewed approach angle of Blueberry Hill Road and crest curve on NH 102 prior to the intersection are believed to reduce sight distance and increase the likelihood of crashes. The proposed project will flatten the crest curve on NH 102 (by up to 2 vertical feet) and improve the approach angle on Blueberry Hill Road through 500 and 120 linear feet of full depth construction on each road, respectively. The existing lane and shoulder width for each roadway are assumed to be perpetuated. Property Acquisition and easements are anticipated to be required. The opinion of probable cost for the NH 102 at Blueberry Hill Road Improvements is \$760,000.

NH 27 (HIGH STREET) PROFILE RAISE – HAMPTON, NH

The east end of NH 27 (High Street) between Mill Pond Road and NH 1A in Hampton is adjacent to the Meadow Pond tidal estuary and is subject to flooding from sea level rise. As indicated by the Seacoast Transportation Corridor Vulnerability Assessment and Resilience Plan (STCVA) prepared by the RPC, impacts to this stretch of roadway will be with 1.0 of sea level rise. As coordinated with the RPC, the proposed improvement will raise the roadway profile by 3' along this stretch. This will include 1,200 linear feet of full profile raise with a 250 linear foot transition on either end. The existing paved roadway width is assumed to be perpetuated, while the informal beach parking along the southern edge of pavement will not be replaced to reduce required wetland impacts. Replacement of the Town's existing water and sewer infrastructure is deemed not to be required and has not been included in the project costs. While costs for temporary easements, slope and driveway regrading, drainage, and landscaping have been included for impacts to the existing residence along the north side of High Street; costs for permanent right-of-way acquisition or resident relocations are not included. Costs for impacts to the tidal wetlands have been incorporated as an In-Lieu Mitigation fee. The opinion of probable cost for the NH 27 Profile Raise is \$3,350,000.

US ROUTE 1 BYPASS TRAFFIC CIRCLE IMPROVEMENTS – PORTSMOUTH, NH

Functional and operation improvements are desired at the aging Portsmouth traffic circle on the US Route 1 Bypass. Although it is understood that a comprehensive study will be required to determine the preferred alternative, through coordination with the RPC, the replacement of the traffic circle with a modern 2-lane roundabout was chosen as the improvement alternative for development of project cost. This improvement consists of a new 2-lane roundabout (in the center of the existing traffic circle) along with right turn by-pass lanes on all approaches as depicted in Figure 8 in the November 2000 Portsmouth Traffic Circle Feasibility Study. New overhead sign structures, intersection lighting, and center island landscaping are also anticipated to be required. As the roundabout and its approaches will be constructed within the footprint of the existing traffic circle, right-of-way impacts are not anticipated, and related costs have not been included. The opinion of probable cost for the US Route 1 Bypass Traffic Circle Improvements is \$8,390,000.

US 1 (LAFAYETTE ROAD) PROFILE RAISE – HAMPTON, NH

US 1 (Lafayette Road) in Hampton, between the Hampton Falls town line and the NH 101 interchange, passes through the Hampton-Seabrook tidal estuary and is subject to flooding from sea level rise. As indicated by the STCVA, impacts to this stretch of roadway will begin with 4.0 of sea level rise. As coordinated with the RPC, the proposed improvement will raise the roadway profile by 4' along this stretch. This will include approximately 2,200 linear feet of full profile raise with a 250 linear foot transition on either end. Two alternatives were discussed with the RPC: a raised causeway lined with retaining walls (to Resist impacts from sea level rise); and a raise causeway/bridge hybrid (to Accommodate sea level rise). As further study will be required to determine the preferred alternative, the RPC elected that a cost estimate be prepared for the causeway/bridge hybrid which is assumed to carry the higher construction cost. This alternative will consist of reconstruction of the existing bridge, construction of a new 1,240 linear foot bridge, and 840 linear feet of raised roadway adjacent to existing commercial properties on the east side of the roadway. The existing roadway width and lane use is anticipated to be perpetuated. The proposed bridges are anticipated to be conventional highway water crossing structures (likely multi-span prestressed concrete superstructures on pile supported abutments and piers) without specific aesthetic features or enhancements such as ornamental lighting, decorative railings or pedestrian overlooks. While costs for temporary easements, slope and driveway regrading, and landscaping have been included for impacts to the existing commercial properties; costs for permanent right-of-way acquisition or business relocations are not included. Costs for impacts to the tidal wetlands have been incorporated as an In-Lieu Mitigation fee. The opinion of probable cost for the US 1 Profile Raise is \$89,030,000.

NH 108 (PORTSMOUTH AVENUE) SIDEWALK AND SIDEPATHS – STRATHAM, NH

The Town of Stratham identified the need for sidewalks along NH 108 (Portsmouth Avenue) from the Shaw's Plaza driveway to the Municipal Center on Bunker Hill Road. Through coordination with the Town and RPC, it was determined that the project should include a 5.5' concrete sidewalk along the west side of the road from the Shaw's Plaza to Scamman's Home and Garden and a 10' asphalt side path from Shaw's to Municipal Center. Previously constructed sidewalk at the Subaru Dealership and Dermatologist will remain, while existing side path at the Porsche/Audi dealership and Parkman Brook Shopping Center. A budget for midblock crossings of NH 108 with rectangular rapid flashing beacons at three locations, as well as pedestrian & bicycle accommodation at two traffic signals have also been included. Temporary and permanent easements are anticipated to be required. The opinion of probable cost for the US 1 Profile Raise is \$2,440,000.

NH 1A (ASHWORTH AVENUE) COMPLETE STREET IMPROVEMENTS – HAMPTON, NH

The Town of Hampton desires to make Complete Streets upgrades to NH 1A (Ashworth Avenue) between Nudd Avenue and Duston Avenue, as depicted in the 2018 Hampton Beach Area Transportation Master Plan Update prepared by VHB. These improvements will reconfigure the roadway to include two 8' wide concrete sidewalks, two 11' wide travel lanes, a 5.5' wide bike lane, and

a 3' to 5' wide shoulder. New street trees on each side of the roadway with a 100' spacing have been assumed. The existing pavement on Ashworth Avenue is anticipated to be cold planed and overlay with a 1.5" pavement course. As coordinated with the RPC, adjustments in the roadway profile to accommodate seas-level rise have not been incorporated in the cost estimate. A significant budget has been carried for permanent easement acquisition, as available tax map information indicates that many sections of the existing sidewalks are constructed beyond the right-of-way. Additional investigation will be required during design to determine if these easements are required or may already have been acquired. The opinion of probable cost for the US 1A (Ashworth Avenue) Complete Street Improvements is \$5,160,000.

NH 108 AT NH 33 INTERSECTION IMPROVEMENTS – STRATHAM, NH

The Town of Stratham's long-term vision for the Town Center District is to make improvements to the NH 108 & NH 33 traffic circle to balance the needs of vehicular, pedestrian, and bicycle traffic. Potential alternatives to replace the traffic circle with a combination of conventional intersections and modern roundabouts were developed by Greenman-Pedersen, Inc. (GPI) in the 2010 Town Center District study. Although it is understood that a comprehensive study will be required to determine the preferred alternative, through coordination with the RPC, Conceptual Design Alternative 2 (Figure 12) from the GPI study was chosen as the improvement alternative for development of project cost. This improvement consists of a new single-lane roundabout at the northwest intersection of NH 108 & NH 33 along with right turn by-pass lanes on the south and east approaches. The southeast leg of the traffic circle will be converted to a cul-de-sac at the intersection of NH 108 and t-intersection at NH 33. As coordinated with the RCP, the intersection improvements at NH 33 and Winnicut Road are not included in the cost estimate. It is assumed the major profile revisions are not required and the step box widening and cold plane and overlay will be utilized for existing roadways. Removal of the two existing culverts and dam in the northwest quadrant of the traffic circle are anticipated to be required and replaced with a new dam and 150 linear foot box culvert just to the south of the new roundabout. The existing culvert on the southeast quadrant of the traffic circle is anticipated to remain and the roadway typical section adjusted to match its width. Property Acquisition and easements are anticipated to be required. The opinion of probable cost for the NH 108 at NH 33 Intersection Improvements is \$12,000,000.

CONCLUSION AND RECOMMENDATIONS

The conceptual opinions of probable cost are provided for the RPC to determine which projects will be recommended to NHDOT for inclusion in the State's Ten-year transportation plan. The estimates are based on currently available project descriptions and conceptual layouts (if available). Further study is anticipated to be required for many of these project locations to determine the preferred alternative or what design elements will be included. Depending on the chosen design, additional construction, engineering, and right-of-way acquisition costs may be required. Costs have been developed utilizing current year (2022) unit prices and inflated to the 2033 build year at a 2.8% per year inflation rate. As the current inflation rate significantly exceeds this value, it is recommended that the RPC coordinate with NHDOT to determine if an adjustment in the rate or build year is desired.

APPENDIX A

Detailed Opinion of Probable Cost



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 04 US 1 Bypass Traffic Circle, Portsmouth NH
 Task: Conceptual Estimate - Replace Traffic Circle with Multi-Lane Roundabout
 Calculated By: NAE Date: 9/27/2022
 Checked By: JFMS Date: 10/7/2022

CONCEPTUAL ESTIMATE

US 1 Bypass Replace Traffic Circle with Multi-Lane Roundabout

SECTION A - MAJOR ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
203.1	COMMON EXCAVATION	CY	26200	\$ 15.00	\$ 393,000.00
203.6	EMBANKMENT-IN-PLACE (F)	CY	2300	\$ 15.00	\$ 34,500.00
304.1	SAND (F)	CY	6400	\$ 30.00	\$ 192,000.00
304.2	GRAVEL (F)	CY	6400	\$ 30.00	\$ 192,000.00
304.3	CRUSHED GRAVEL (F)	CY	6600	\$ 35.00	\$ 231,000.00
403.11XXX	HBP-VARIOUS, MACHINE METHOD, HIGH STRENGTH, QC/QA TIER 2	TON	5750	\$ 105.00	\$ 603,750.00
403.16	PAVEMENT JOINT ADHESIVE	LF	16600	\$ 2.00	\$ 33,200.00
410.22	ASPHALT EMULSION FOR TACK COAT	GAL	975	\$ 7.50	\$ 7,312.50
417	COLD PLANING BITUMINOUS SURFACES	SY	5600	\$ 4.00	\$ 22,400.00
606.1257	MEDIAN GUARDRAIL TERMINAL UNIT	U	2	\$ 17,000.00	\$ 34,000.00
606.28001	31" DOUBLE FACED W-BEAM GUARDRAIL WITH 8" OFFSET BLOCK (STEEL POST)	LF	475	\$ 40.00	\$ 19,000.00
606.413	SINGLE SLOPE CONCRETE MEDIAN BARRIER, PRECAST	LF	660	\$ 150.00	\$ 99,000.00
608.26	6" CONCRETE SIDEWALK (F)	SY	4400	\$ 65.00	\$ 286,000.00
608.38	8" REINFORCED CONCRETE SIDEWALK	SY	450	\$ 90.00	\$ 40,500.00
609.01	STRAIGHT GRANITE CURB	LF	2900	\$ 37.00	\$ 107,300.00
609.01187	STRAIGHT GRANITE CURB, 18" HIGH WITH 3" ROUNDED EDGE	LF	600	\$ 40.00	\$ 24,000.00
609.216	STRAIGHT GRANITE SLOPE CURB 6" HIGH	LF	5150	\$ 37.00	\$ 190,550.00
	MISCELLANEOUS ROADWAY				
				10% OF ABOVE TOTAL	\$ 250,951.25
				SUBTOTAL A	\$ 2,760,463.75

SECTION B - MISCELLANEOUS ITEMS

SIGNS, MARKINGS, LOAM/HUMUS, ETC.	8%	\$ 220,837.10
	SUBTOTAL B	\$ 2,981,300.85

SECTION C - DRAINAGE ITEMS

PIPES, UNDERDRAIN, CB's, MH's, ETC.	12%	\$ 357,756.10
	SUBTOTAL C	\$ 3,339,056.95

SECTION D - TRAFFIC CONTROL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
618.61	UNIFORMED OFFICERS WITH VEHICLE	\$	48000	\$ 1.00	\$ 48,000.00
618.7	FLAGGERS	HR	1800	\$ 45.00	\$ 81,000.00
619.1	MAINTENANCE OF TRAFFIC	U	1	\$ 120,000.00	\$ 120,000.00
	MISCELLANEOUS TRAFFIC CONTROL			10% OF ABOVE TOTAL	\$ 24,900.00
				SUBTOTAL D	\$ 3,612,956.95

SECTION E - EROSION AND SEDIMENT CONTROL

EROSION, SEDIMENT, AND POLLUTION CONTROL (HAY BALES, SILT FENCE, SWPPP, TEMP. WATER POLL. CONTROL, ETC.)	30% OF DRAINAGE	\$ 107,326.83
	SUBTOTAL E	\$ 3,720,283.78



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 04 US 1 Bypass Traffic Circle, Portsmouth NH
 Task: Conceptual Estimate - Replace Traffic Circle with Multi-Lane Roundabout
 Calculated By: NAE Date: 9/27/2022
 Checked By: JFMS Date: 10/7/2022

CONCEPTUAL ESTIMATE

US 1 Bypass Replace Traffic Circle with Multi-Lane Roundabout

SECTION F - ADDITIONAL ITEMS

Landscaping (Roundabout Center)		\$	25,000.00
Overhead Sign Structure Relocation		\$	90,000.00
Roadway Lighting		\$	75,000.00
	SUBTOTAL F	\$	3,910,283.78

SECTION G - MOBILIZATION AND CONTINGENCIES

ROADWAY MOBILIZATION	10%	\$	391,028.38
	SUBTOTAL G	\$	4,301,312.16
	ROUNDED CONSTRUCTION SUBTOTAL:	\$	4,302,000.00
	CONTINGENCY	15%	\$ 646,000.00
	ROUNDED CONSTRUCTION TOTAL	\$	4,950,000.00
	CONSTRUCTION ENGINEERING	10%	\$ 495,000.00
	DESIGN ENGINEERING	15%	\$ 743,000.00
	RIGHT OF WAY ACQUISITION	\$	-
	INFLATION (11 YEARS)	2.8%	\$ 2,196,449.75
	ROUNDED PROJECT TOTAL COSTS (CON, ROW, PE)	\$	8,390,000.00



CONCEPTUAL ESTIMATE - ASSUMPTIONS

This Conceptual Engineer's Estimate of Probable Construction Costs is based on the anticipated scope of work, as well as Hoyle Tanner's experience with similar projects and understanding of current industry trends. The estimate has not been based on a final design for this project, and as such, it is intended to be preliminary in nature. It should be noted that changes in material or labor costs in the construction industry could impact the project cost in either direction. Assumptions used for this estimate are listed below.

1. Estimate based on 2-Lane Roundabout from 2000 Portsmouth Traffic Circle Feasibility study by NHDOT
2. Full depth construction anticipated for new roundabout and for approaches from roundabout to where existing splitter islands begin flaring (~280' from roundabout EP)
3. Minimal change in profile grade
4. Typical section for circulatory roadway and approaches will be:
 - 1.5" High Strength Surface, QC/QA Tier 2
 - 3.0" High Strength Binder, QC/QA Tier 2
 - 3.5" Base, QC/QA Tier 2
 - 12" Crushed Gravel, 12" Gravel, 12" Sand
5. Truck apron will be 10 ft wide and surfaced with 8" Reinforced Concrete Sidewalk
6. Center island will be landscaped
7. Center island and approach curbing will be straight granite curb;
Circulatory roadway curbing will have rounded edge
8. Splitter islands will be raised using 6" high slope curb and will be surfaced with 6" Concrete Sidewalk
No pedestrian cut throughs will be incorporated
9. Existing asphalt not already being excavated for roundabout construction will be removed, and revegetated with loam and turf establishment
10. Existing select materials will not be excavated except where needed for roundabout construction
11. Major reconfiguration of closed drainage system is anticipated
12. No R.O.W. impacts are anticipated; No costs have been included
13. No utility adjustments or relocations are anticipated; No costs have been included
14. Traffic cannot be detoured; Construction will be phased to maintain traffic through duration
15. Topographic survey of the project limits will be required
16. No wetlands / environmental resources will be impacted
17. Existing single slope concrete barrier on Spaulding Turnpike approach will be extended
18. Existing guardrail on NE approach will be extended and new median guardrail terminal installed
19. Overhead sign structures will require replacement
20. Existing overhead lighting will be removed and new roadway lighting installed



CONCEPTUAL ESTIMATE

NH 102 @ Blueberry Hill Road Intersection & Visibility Improvements

SECTION A - MAJOR ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
201.1	CLEARING AND GRUBBING (F)	A	0.25	\$ 15,000.00	\$ 3,750.00
203.1	COMMON EXCAVATION	CY	2900	\$ 15.00	\$ 43,500.00
304.1	SAND (F)	CY	580	\$ 30.00	\$ 17,400.00
304.2	GRAVEL (F)	CY	730	\$ 30.00	\$ 21,900.00
304.3	CRUSHED GRAVEL (F)	CY	670	\$ 35.00	\$ 23,450.00
403.11XXX	HBP-VARIOUS, MACHINE METHOD	TON	530	\$ 100.00	\$ 53,000.00
403.12	HBP-HAND METHOD (DRIVEWAYS)	TON	15	\$ 175.00	\$ 2,625.00
403.16	PAVEMENT JOINT ADHESIVE	LF	1420	\$ 2.00	\$ 2,840.00
410.22	ASPHALT EMULSION FOR TACK COAT	GAL	85	\$ 7.50	\$ 637.50
417	COLD PLANING BITUMINOUS SURFACES	SY	270	\$ 10.00	\$ 2,700.00
	MISCELLANEOUS ROADWAY			10% OF ABOVE TOTAL	\$ 17,180.25
				SUBTOTAL A	\$ 188,982.75

SECTION B - MISCELLANEOUS ITEMS

SIGNS, MARKINGS, LOAM/HUMUS, ETC.	10%	\$	18,898.28
	SUBTOTAL B	\$	207,881.03

SECTION C - DRAINAGE ITEMS

PIPES, ETC.	5%	\$	10,394.05
	SUBTOTAL C	\$	218,275.08

SECTION D - TRAFFIC CONTROL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
616.171	PORTABLE TRAFFIC SIGNALS (PTS) SYSTEM	U	1	\$ 30,000.00	\$ 30,000.00
618.7	FLAGGERS	HR	870	\$ 45.00	\$ 39,150.00
619.1	MAINTENANCE OF TRAFFIC	U	1	\$ 20,000.00	\$ 20,000.00
	MISCELLANEOUS TRAFFIC CONTROL			10% OF ABOVE TOTAL	\$ 8,915.00
				SUBTOTAL D	\$ 316,340.08

SECTION E - EROSION AND SEDIMENT CONTROL

EROSION, SEDIMENT, AND POLLUTION CONTROL (HAY BALES, SILT FENCE, SWPPP, TEMP. WATER POLL. CONTROL, ETC.)	100% OF DRAINAGE	\$	10,394.05
	SUBTOTAL E	\$	326,734.13



**HOYLE
TANNER**

Project:	Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates		
Project No.	22.144401.01		
Location:	02 NH 102 at Blueberry Hill Road, Raymond NH		
Task:	Conceptual Estimate - Intersection & Visibility Improvements		
Calculated By:	CKC	Date:	10/4/2022
Checked By:	JFMS	Date:	10/6/2022

CONCEPTUAL ESTIMATE

NH 102 @ Blueberry Hill Road Intersection & Visibility Improvements

SECTION F - ADDITIONAL ITEMS

Landscaping (Private Property)		\$	15,000.00
	SUBTOTAL F	\$	341,734.13

SECTION G - MOBILIZATION AND CONTINGENCIES

ROADWAY MOBILIZATION	10%	\$	34,173.41
	SUBTOTAL G	\$	375,907.54

	ROUNDED CONSTRUCTION SUBTOTAL:	\$	376,000.00
	CONTINGENCY	15%	\$ 57,000.00
	ROUNDED CONSTRUCTION TOTAL		\$ 435,000.00

	CONSTRUCTION ENGINEERING	10%	\$	44,000.00
	DESIGN ENGINEERING	15%	\$	66,000.00
	RIGHT OF WAY / EASEMENT ACQUISITION		\$	15,000.00
	INFLATION (11 YEARS)	2.8%	\$	198,773.73

ROUNDED PROJECT TOTAL COSTS (CON, ROW, PE)			\$	760,000.00
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CONCEPTUAL ESTIMATE - ASSUMPTIONS

This Conceptual Engineer's Estimate of Probable Construction Costs is based on the anticipated scope of work, as well as Hoyle Tanner's experience with similar projects and understanding of current industry trends. The estimate has not been based on a final design for this project, and as such, it is intended to be preliminary in nature. It should be noted that changes in material or labor costs in the construction industry could impact the project cost in either direction. Assumptions used for this estimate are listed below.

1. 500' of full depth reconstruction of NH 102 to lower vertical crest
2. NH 102 will need to be lowered a maximum of 2 feet; Use average lowering of 1 foot
3. NH 102 will match existing width (32' plus overwidened shoulder in east quadrant)
4. NH 102 box materials will follow NHDOT 12'-4' typical
[1.5" Surface Pave, 2.5" Binder Pave, 8" Crushed Gravel, 8" Gravel, 8" Sand]
5. Ditchline both sides of NH 102 [6:1 foreslope with DL 6' from EP, 2:1 back slope]
6. Utility Pole Relocation (By Others) will be required
7. 120' of full depth reconstruction of Blueberry Hill Road to correct intersection angle
8. Minimal change of profile grade for Blueberry Hill Road
9. Blueberry Hill Road will match existing width (22')
10. Blueberry Hill Road box materials will follow NHDOT 10'4' typical ('97 Raymond Road Standards outdated)
[1.5" Surface Pave, 2" Binder Pave, 6" Crushed Gravel, 12" Gravel]
11. No underdrain or closed drainage system will be required; One cross culvert under Blueberry Hill Road
12. Both temporary and permanent R.O.W. impacts are anticipated; Anticipated costs are included
13. Traffic cannot be detoured during construction, will maintain one-way alternating
14. Roadway cannot be re-opened at night; Use temporary signals for 24/7 traffic control
15. Existing centerline rumble strip on NH 102 will be reincorporated on proposed roadway
16. No rock excavation will be needed
17. Topographic survey of the project limits will be required
18. No wetlands / environmental resources will be impacted
Intersection falls within groundwater protection zone
19. Existing waterline along NB side of Blueberry Hill Rd and NB side of NH102 north of Blueberry Hill will not be relocated nor will any hydrants require adjustment.
20. ROW Impacts have the following costs: Takings = \$10/SF, Perm Ease = \$5/SF, Temp Ease = \$1/SF



CONCEPTUAL ESTIMATE

NH 1A Southbound (Ashworth Avenue) Complete Streets Upgrades

SECTION A - MAJOR ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
203.1	COMMON EXCAVATION	CY	2100	\$ 35.00	\$ 73,500.00
304.3	CRUSHED GRAVEL (F)	CY	1300	\$ 35.00	\$ 45,500.00
403.11XXX	HBP-VARIOUS, MACHINE METHOD	TON	1650	\$ 100.00	\$ 165,000.00
403.12	HBP-HAND METHOD	TON	865	\$ 175.00	\$ 151,375.00
403.16	PAVEMENT JOINT ADHESIVE	LF	7600	\$ 2.00	\$ 15,200.00
410.22	ASPHALT EMULSION FOR TACK COAT	GAL	1100	\$ 7.50	\$ 8,250.00
417	COLD PLANING BITUMINOUS SURFACES	SY	22000	\$ 4.00	\$ 88,000.00
608.24	4" CONCRETE SIDEWALK (F)	SY	7100	\$ 60.00	\$ 426,000.00
608.54	DETECTABLE WARNING DEVICES, CAST IRON	SY	170	\$ 500.00	\$ 85,000.00
609.01	STRAIGHT GRANITE CURB	LF	7900	\$ 37.00	\$ 292,300.00
628.2	SAWED BITUMINOUS PAVEMENT	LF	8000	\$ 4.00	\$ 32,000.00
	MISCELLANEOUS ROADWAY		10% OF ABOVE TOTAL	\$	\$ 138,212.50
			SUBTOTAL A		\$ 1,520,337.50

SECTION B - MISCELLANEOUS ITEMS

SIGNS, MARKINGS, LOAM/HUMUS, ETC.	7%	\$	106,423.63
	SUBTOTAL B	\$	1,626,761.13

SECTION C - DRAINAGE ITEMS

PIPES, UNDERDRAIN, CB's, MH's, ETC.	20%	\$	325,352.23
	SUBTOTAL C	\$	1,952,113.35

SECTION D - TRAFFIC CONTROL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
618.7	FLAGGERS	HR	1000	\$ 45.00	\$ 45,000.00
619.1	MAINTENANCE OF TRAFFIC	U	1	\$150,000.00	\$ 150,000.00
	MISCELLANEOUS TRAFFIC CONTROL		10% OF ABOVE TOTAL	\$	\$ 19,500.00
			SUBTOTAL D		\$ 2,166,613.35

SECTION E - EROSION AND SEDIMENT CONTROL

EROSION, SEDIMENT, AND POLLUTION CONTROL (HAY BALES, SILT FENCE, SWPPP, TEMP. WATER POLL. CONTROL, ETC.)	15% OF DRAINAGE	\$	48,802.83
	SUBTOTAL E	\$	2,215,416.18



**HOYLE
TANNER**

Project:	Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates		
Project No.	22.144401.01		
Location:	07 NH 1A SB (Ashworth Ave), Hampton NH		
Task:	Conceptual Estimate - Complete Streets Upgrades		
Calculated By:	CKC	Date:	10/11/2022
Checked By:	JFMS	Date:	10/12/2022

CONCEPTUAL ESTIMATE

NH 1A Southbound (Ashworth Avenue) Complete Streets Upgrades

SECTION F - ADDITIONAL ITEMS

Street Trees (both sides x every 100')	100	\$	800.00	\$	80,000.00
	SUBTOTAL F			\$	2,295,416.18

SECTION G - MOBILIZATION AND CONTINGENCIES

ROADWAY MOBILIZATION	10%		\$	229,541.62
	SUBTOTAL G			\$ 2,524,957.80
	ROUNDED CONSTRUCTION SUBTOTAL:			\$ 2,525,000.00
		CONTINGENCY	15%	\$ 379,000.00
	ROUNDED CONSTRUCTION TOTAL			\$ 2,905,000.00
	CONSTRUCTION ENGINEERING			10% \$ 291,000.00
	DESIGN ENGINEERING			15% \$ 436,000.00
	RIGHT OF WAY ACQUISITION			\$ 175,000.00
	INFLATION (11 YEARS)			2.8% \$ 1,351,306.43
	ROUNDED PROJECT TOTAL COSTS (CON, ROW, PE)			\$ 5,160,000.00



CONCEPTUAL ESTIMATE - ASSUMPTIONS

This Conceptual Engineer's Estimate of Probable Construction Costs is based on the anticipated scope of work, as well as Hoyle Tanner's experience with similar projects and understanding of current industry trends. The estimate has not been based on a final design for this project, and as such, it is intended to be preliminary in nature. It should be noted that changes in material or labor costs in the construction industry could impact the project cost in either direction. Assumptions used for this estimate are listed below.

1. Project limits are from NH 1A diverge at Nudd Ave, south to Duston Ave
2. Anticipate Ashworth Ave typical section will be:
 - 8' wide (including curb & street trees) sidewalk both sides of road
 - 5'-6" bike lane on eastern side of road
 - Two 11'-0" southbound vehicle travel lanes
 - Shoulder on west side will be variable width (3' to 5') to maintain exist. back of sidewalk
3. Exist sidewalk concrete will need to be removed and reconstructed to provide 7" reveal with new typical Exist. sidewalk subbase can remain; remove concrete, shim with crushed gravel, repave Prop back of sidewalk will be 1.5" to 2.5" higher than exist to not reduce pavement depth
4. Existing Ashworth Ave asphalt will be cold planed 1.5" deep and overlaid a variable depth (1.5" min) Variable depth mill to shift crown line to new lane lane (2' shift)
5. Existing pavement area converted to proposed sidewalk will have existing pavement removed, be shimmed with crushed gravel, then new 4" concrete installed Anticipate removal of 4" existing pavement
6. Anticipate 20 midblock crosswalks on Ashworth Avenue with curb bumpout on western side (match exist) No bumpout on eastern side due to bike lane Anticipate signage & markings, no RRFB
7. Anticipate 30 side street crosswalks parallel to Ashworth Avenue
8. ADA curb ramps/landings will be installed at the anticipated 20 midblock and 30 side streets crosswalks
9. Temporary and permanent R.O.W. impacts are anticipated; Anticipated costs are included Existing sidewalk extends beyond R.O.W.
10. Existing closed drainage system will require significant modification as a result of new gutter line
11. All manholes, water gates, and gas shutoffs in Ashworth Ave pavement will require adjustment
12. Utility pole relocations are not anticipated
13. Disruption to vehicle traffic will be minimal; Daily shoulder/lane closures with flaggers, reopened nightly
14. Temporary pedestrian accommodations will be required to maintain access during construction Anticipate closing one sidewalk at a time and detouring pedestrians
15. No impacts to natural or cultural resources
16. Anticipate 12' of driveway mill and overlay for all driveways
17. Topographic survey of the project limits will be required
18. Grade adjustments to accommodate sea level rise are not proposed
19. ROW Impacts have the following costs: Takings = \$10/SF, Perm Ease = \$5/SF, Temp Ease = \$3/SF



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 06 NH 108 (Portsmouth Ave), Stratham NH
 Task: Conceptual Estimate - Sidewalk and Side Path Construction
 Calculated By: NAE Date: 10/4/2022
 Checked By: JFMS Date: 10/7/2022

CONCEPTUAL ESTIMATE

NH 108 (Portsmouth Avenue) Sidewalk and Side Path Construction

SECTION A - MAJOR ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
203.1	COMMON EXCAVATION	CY	3900	\$ 15.00	\$ 58,500.00
203.6	EMBANKMENT-IN-PLACE (F)	CY	1850	\$ 15.00	\$ 27,750.00
304.3	CRUSHED GRAVEL (F)	CY	2700	\$ 35.00	\$ 94,500.00
403.12	HBP-HAND METHOD	TON	220	\$ 175.00	\$ 38,500.00
403.16	PAVEMENT JOINT ADHESIVE	LF	3200	\$ 2.00	\$ 6,400.00
606.1255	BEAM GUARDRAIL (TERMINAL UNIT TYPE EAGRT, TL 2) (STEEL POST)	U	2	\$ 4,000.00	\$ 8,000.00
606.18001	31" W-BEAM GUARDRAIL W/8" OFFSET BLOCK (STEEL POST)	LF	600	\$ 30.00	\$ 18,000.00
608.12	2" BITUMINOUS SIDEWALK (F)	SY	6500	\$ 2.00	\$ 13,000.00
608.24	4" CONCRETE SIDEWALK (F)	SY	1950	\$ 60.00	\$ 117,000.00
608.54	DETECTABLE WARNING DEVICES, CAST IRON	SY	35	\$ 500.00	\$ 17,500.00
609.01	STRAIGHT GRANITE CURB	LF	3200	\$ 37.00	\$ 118,400.00
628.2	SAWED BITUMINOUS PAVEMENT	LF	3200	\$ 4.00	\$ 12,800.00
MISCELLANEOUS ROADWAY			10% OF ABOVE TOTAL		\$ 53,035.00
SUBTOTAL A					\$ 583,385.00

SECTION B - MISCELLANEOUS ITEMS

SIGNS, MARKINGS, LOAM/HUMUS, ETC.	10%	\$ 58,338.50
SUBTOTAL B		\$ 641,723.50

SECTION C - DRAINAGE ITEMS

PIPES, UNDERDRAIN, CB's, MH's, ETC.	20%	\$ 128,344.70
SUBTOTAL C		\$ 770,068.20

SECTION D - TRAFFIC CONTROL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
618.61	UNIFORMED OFFICERS WITH VEHICLE	\$	8000	\$ 1.00	\$ 8,000.00
618.7	FLAGGERS	HR	1000	\$ 45.00	\$ 45,000.00
619.1	MAINTENANCE OF TRAFFIC	U	1	\$ 25,000.00	\$ 25,000.00
MISCELLANEOUS TRAFFIC CONTROL			10% OF ABOVE TOTAL		\$ 7,800.00
SUBTOTAL D					\$ 855,868.20

SECTION E - EROSION AND SEDIMENT CONTROL

EROSION, SEDIMENT, AND POLLUTION CONTROL (HAY BALES, SILT FENCE, SWPPP, TEMP. WATER POLL. CONTROL, ETC.)	30% OF DRAINAGE	\$ 38,503.41
SUBTOTAL E		\$ 894,371.61



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 06 NH 108 (Portsmouth Ave), Stratham NH
 Task: Conceptual Estimate - Sidewalk and Side Path Construction
 Calculated By: NAE Date: 10/4/2022
 Checked By: JFMS Date: 10/7/2022

CONCEPTUAL ESTIMATE

NH 108 (Portsmouth Avenue) Sidewalk and Side Path Construction

SECTION F - ADDITIONAL ITEMS

Midblock Crossing RRFB's (x3)	\$	75,000.00
Signal Modifications & Timing(x2)	\$	80,000.00
Landscaping (Commercial Sites)	\$	50,000.00
SUBTOTAL F	\$	1,099,371.61

SECTION G - MOBILIZATION AND CONTINGENCIES

ROADWAY MOBILIZATION	10%	\$	109,937.16
SUBTOTAL G		\$	1,209,308.77
		ROUNDED CONSTRUCTION SUBTOTAL:	\$ 1,210,000.00
		CONTINGENCY 15%	\$ 182,000.00
ROUNDED CONSTRUCTION TOTAL		\$	1,395,000.00
CONSTRUCTION ENGINEERING	10%	\$	140,000.00
DESIGN ENGINEERING	15%	\$	210,000.00
RIGHT OF WAY ACQUISITION		\$	50,000.00
INFLATION (11 YEARS)	2.8%	\$	637,140.81
ROUNDED PROJECT TOTAL COSTS (CON, ROW, PE)		\$	2,440,000.00



CONCEPTUAL ESTIMATE - ASSUMPTIONS

This Conceptual Engineer's Estimate of Probable Construction Costs is based on the anticipated scope of work, as well as Hoyle Tanner's experience with similar projects and understanding of current industry trends. The estimate has not been based on a final design for this project, and as such, it is intended to be preliminary in nature. It should be noted that changes in material or labor costs in the construction industry could impact the project cost in either direction. Assumptions used for this estimate are listed below.

1. Approximately 3,050' of sidewalk construction along NH 108 SB from Shaw's intersection northward to Scamman's Home & Garden with the exception of previously constructed sidewalk along dermatologist office and Exter Subaru parcels, as depicted in 2008 Gateway District Master Plan
2. Approximately 5,600' of side path construction along NH 108 NB from from Shaw's intersection northward to Bunker Hill Road and along Bunker Hill Road to the Town Hall, including reconstruction of previously constructed sidewalk along Audi/Porsche Stratham and Parkman Brook Shopping Center parcels, as depicted in 2008 Gateway District Master Plan
3. Typical section for sidewalk is 5.5' wide from face of curb to back of sidewalk
[7" reveal granite curb, 4" concrete sidewalk surface, 6" crushed gravel subbase]
4. Typical section for side path is 10' wide with no curb and avg 5' wide grass buffer to EP
[2" bituminous sidewalk, 12" crushed gravel subbase]
5. All existing curb in proposed sidewalk areas will be removed and discarded; Curb cannot be reused
6. Existing side slopes in curbed areas are 5%; Proposed side slopes in these areas will not exceed 6:1
7. Existing side slopes in uncurbed areas without guardrail are 8:1; Proposed slopes will be 6:1
8. Existing side slopes behind guardrail are 3:1 and approximately 10' tall;
Proposed slopes behind guardrail will be 2:1
9. Driveways are anticipated to be milled and overlaid to 12' from existing EP
10. No impacts to natural or cultural resources
11. Temporary and permanent R.O.W. impacts are anticipated; Anticipated costs are included
12. Existing closed drainage system will require modification as a result of new sidewalk curb
13. Utility pole relocation is anticipated; To be performed by others, no costs included
14. Two existing traffic signals within project limits will require modification for pedestrian crossings
[Signal timing design; Curb ramps; Markings]
15. A midblock crosswalk will be installed near the River Road intersection, Anticipate needing RRFB
16. A midblock crosswalk will be installed near the Raeder Drive intersection, Anticipate needing RRFB
17. A midblock crosswalk will be installed near the northern sidewalk terminus (Scamman Home & Garden);
Anticipate needing RRFB
18. No impacts to water are anticipated
19. Minimal traffic impact; Sidewalk and side path can be constructed with daily shoulder/lane closures
20. Existing guardrail along southbound EP will be replaced at back of sidewalk and extended as needed
21. ADA curb ramps/landings will be installed at the two existing traffic signals, at the three anticipated midblock crossings, at crosswalks on River Road and Frying Pan Lane, and additional areas where the fog line (white stripe) is broken across a drive or side road
22. Topographic survey of the project limits will be required
23. ROW Impacts have the following costs: Takings = \$10/SF, Perm Ease = \$5/SF, Temp Ease = \$1/SF



CONCEPTUAL ESTIMATE

NH 27 (High Street) Profile Raise to Accommodate Sea Level Rise

SECTION A - MAJOR ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
203.1	COMMON EXCAVATION	CY	5000	\$ 20.00	\$ 100,000.00
203.6	EMBANKMENT-IN-PLACE (F)	CY	8800	\$ 15.00	\$ 132,000.00
304.2	GRAVEL (F)	CY	2350	\$ 30.00	\$ 70,500.00
304.3	CRUSHED GRAVEL (F)	CY	1450	\$ 35.00	\$ 50,750.00
304.35	CRUSHED GRAVEL FOR DRIVES	CY	1300	\$ 40.00	\$ 52,000.00
403.11XXX	HBP-VARIOUS, MACHINE METHOD	TON	1500	\$ 100.00	\$ 150,000.00
403.12	HBP-HAND METHOD (DRIVEWAYS)	TON	500	\$ 175.00	\$ 87,500.00
403.16	PAVEMENT JOINT ADHESIVE	LF	3500	\$ 2.00	\$ 7,000.00
410.22	ASPHALT EMULSION FOR TACK COAT	GAL	235	\$ 7.50	\$ 1,762.50
417	COLD PLANING BITUMINOUS SURFACES	SY	105	\$ 4.00	\$ 420.00
606.1255	BEAM GUARDRAIL (TERMINAL UNIT TYPE EAGRT, TL 2) (STEEL POST)	U	2	\$ 4,000.00	\$ 8,000.00
606.18001	31" W-BEAM GUARDRAIL W/8" OFFSET BLOCK (STEEL POST)	LF	1125	\$ 30.00	\$ 33,750.00
608.24	4" CONCRETE SIDEWALK (F)	SY	750	\$ 60.00	\$ 45,000.00
609.01	STRAIGHT GRANITE CURB	LF	1450	\$ 37.00	\$ 53,650.00
	MISCELLANEOUS ROADWAY			10% OF ABOVE TOTAL	\$ 79,233.25
				SUBTOTAL A	\$ 871,565.75

SECTION B - MISCELLANEOUS ITEMS

SIGNS, MARKINGS, LOAM/HUMUS, ETC.	10%	\$ 87,156.58
	SUBTOTAL B	\$ 958,722.33

SECTION C - DRAINAGE ITEMS

PIPES, UNDERDRAIN, CB's, MH's, ETC.	20%	\$ 191,744.47
	SUBTOTAL C	\$ 1,150,466.79

SECTION D - TRAFFIC CONTROL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
606.417	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL	LF	1500	\$ 30.00	\$ 45,000.00
616.171	PORTABLE TRAFFIC SIGNALS (PTS) SYSTEM	U	1	\$ 45,000.00	\$ 45,000.00
618.7	FLAGGERS	HR	1750	\$ 45.00	\$ 78,750.00
619.1	MAINTENANCE OF TRAFFIC	U	1	\$ 20,000.00	\$ 20,000.00
	MISCELLANEOUS TRAFFIC CONTROL			10% OF ABOVE TOTAL	\$ 18,875.00
				SUBTOTAL D	\$ 1,358,091.79

SECTION E - EROSION AND SEDIMENT CONTROL

EROSION, SEDIMENT, AND POLLUTION CONTROL (HAY BALES, SILT FENCE, SWPPP, TEMP. WATER POLL. CONTROL, ETC.)	30% OF DRAINAGE	\$ 57,523.34
	SUBTOTAL E	\$ 1,415,615.13



**HOYLE
TANNER**

Project:	Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates		
Project No.	22.144401.01		
Location:	03 NH 27 (High St), Hampton NH		
Task:	Conceptual Estimate - Profile Raise to Accommodate Sea Level Rise		
Calculated By:	CKC	Date:	10/10/2022
Checked By:	JFMS	Date:	10/12/2022

CONCEPTUAL ESTIMATE

NH 27 (High Street) Profile Raise to Accommodate Sea Level Rise

SECTION F - ADDITIONAL ITEMS

Landscaping (Private Property)		\$	80,000.00
	SUBTOTAL F	\$	1,495,615.13

SECTION G - MOBILIZATION AND CONTINGENCIES

ROADWAY MOBILIZATION	10%	\$	149,561.51
	SUBTOTAL G	\$	1,645,176.64

ROUNDED CONSTRUCTION SUBTOTAL:	\$	1,646,000.00
CONTINGENCY 15%	\$	247,000.00

ROUNDED CONSTRUCTION TOTAL **\$ 1,895,000.00**

CONSTRUCTION ENGINEERING 10% **\$ 190,000.00**

DESIGN ENGINEERING 15% **\$ 285,000.00**

WETLANDS IN-LIEU MITIGATION FEE **\$ 33,000.00**

RIGHT OF WAY / EASEMENT ACQUISITION **\$ 65,000.00**

INFLATION (11 YEARS) 2.8% **\$ 876,024.24**

ROUNDED PROJECT TOTAL COSTS (CON, ROW, PE) **\$ 3,350,000.00**



CONCEPTUAL ESTIMATE - ASSUMPTIONS

This Conceptual Engineer's Estimate of Probable Construction Costs is based on the anticipated scope of work, as well as Hoyle Tanner's experience with similar projects and understanding of current industry trends. The estimate has not been based on a final design for this project, and as such, it is intended to be preliminary in nature. It should be noted that changes in material or labor costs in the construction industry could impact the project cost in either direction. Assumptions used for this estimate are listed below.

1. 1200' of 3' profile raise, tapering to no raise over 250' to the east and west
2. Typical section will consist of removing existing pavement and box material, raise road with fill, then construct new road box
3. Anticipate existing road box is 6" bituminous asphalt, 18" aggregate subbase
4. Proposed NH 27 box materials will follow Hampton standards
[1.5" Surface Pave, 2" Binder Pave, 6" Crushed Gravel, 12" Gravel]
5. Existing concrete sidewalk (5' wide) disturbed by raising of road will be reconstructed 5.5' wide
Reconstructed sidewalk will be 4" concrete with 6" crushed gravel
Existing granite curb will be discarded; All proposed curb will be new
6. All driveway area within 40' of edge of pavement will be reconstructed per standard detail
[Residential Drives 3" hand method, 8" crushed gravel]
[Commercial Drives 3" hand method, 12" crushed gravel]
7. Anticipate replacement of existing twin 24" culverts between Mill Pond Ln & pump house
Existing culverts west of Mill Pond Ln will not be impacted
8. Guardrail will be required along eastbound shoulder
9. Proposed side slopes to residential yards will be 6:1 or flatter
10. Existing 35' roadway width will be maintained; No change to lane/shoulder widths
11. Utility (Water/Sewer) work is not anticipated and is not included in this estimate
12. Toe of slope from raised road will result in wetland impacts along eastbound shoulder
In-Lieu mitigation fee is assumed
13. Topographic survey of the project limits will be required
14. Temporary R.O.W. impacts are anticipated; Anticipated costs are included
Permanent R.O.W. impacts or building relocations are not anticipated
15. New and/or reconstructed closed drainage will be required
16. Traffic cannot be detoured during construction, will maintain one-way alternating
17. Roadway cannot be re-opened at night; Use temporary signals for 24/7 traffic control
18. Unit price used for excavation is elevated to account for anticipated unsuitable materials
19. ROW Impacts have the following costs: Takings = \$10/SF, Perm Ease = \$5/SF, Temp Ease = \$1/SF



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 01 Maplewood Avenue Bridge, Portsmouth NH
 Task: Conceptual Estimate - Bridge Replacement to Accommodate Sea Level Rise
 Calculated By: JAS Date: 10/1/2020
 Checked By: AML Date: 10/14/2022

CONCEPTUAL ESTIMATE

MAPLEWOOD AVENUE BRIDGE REPLACEMENT

SECTION A - MAJOR ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTIT	UNIT COST	COST
203.1	COMMON EXCAVATION	CY	1150	\$ 30.00	\$ 34,500.00
207.3	UNCLASSIFIED CHANNEL EXCAVATION	CY	2000	\$ 55.00	\$ 110,000.00
209.201	GRANULAR BACKFILL (BRIDGE) (F)	CY	500	\$ 75.00	\$ 37,500.00
304.2	GRAVEL (F)	CY	550	\$ 40.00	\$ 22,000.00
304.3	CRUSHED GRAVEL (F)	CY	550	\$ 40.00	\$ 22,000.00
403.11	HOT BITUMINOUS PAVEMENT, MACHINE METHOD	TON	300	\$ 200.00	\$ 60,000.00
403.911	HOT BITUMINOUS BRIDGE PAVEMENT, 1" BASE COURSE	TON	50	\$ 200.00	\$ 10,000.00
502	REMOVAL OF EXISTING BRIDGE STRUCTURE	U	1	\$ 50,000.00	\$ 50,000.00
503.101	WATER DIVERSION STRUCTURE	U	1	\$ 75,000.00	\$ 75,000.00
503.201	COFFERDAMS	U	1	\$ 60,000.00	\$ 60,000.00
504.1	COMMON BRIDGE EXCAVATION (F)	CY	700	\$ 50.00	\$ 35,000.00
509.4	ROCK SOCKET EXCAVATION	LF	150	\$ 2,500.00	\$ 375,000.00
510.1	PILE DRIVING EQUIPMENT	U	1	\$ 65,000.00	\$ 65,000.00
510.61	FURNISHING & DRIVING STEEL BEARING PILES	LB	25000	\$ 1.10	\$ 27,500.00
510.65	DRIVING-POINTS FOR STEEL BEARING PILES	EA	16	\$ 500.00	\$ 8,000.00
520.02	CONCRETE CLASS AA, ABOVE FOOTINGS (F)	CY	200	\$ 1,500.00	\$ 300,000.00
520.02025	CONCRETE CLASS AA, RAIL SUPPORT SLAB	CY	200	\$ 1,000.00	\$ 200,000.00
520.03	CONCRETE CLASS AA, APPROACH SLABS	CY	200	\$ 600.00	\$ 120,000.00
520.2	CONCRETE CLASS B	CY	50	\$ 1,000.00	\$ 50,000.00
520.7	CONCRETE BRIDGE DECK (F)	CY	300	\$ 1,400.00	\$ 420,000.00
538.5	BARRIER MEMBRANE, HEAT WELDED (F)	SY	900	\$ 45.00	\$ 40,500.00
544.3	REINFORCING STEEL (CONTRACTOR DETAILED)	LB	25000	\$ 2.00	\$ 50,000.00
544.31	REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED)	LB	125000	\$ 3.00	\$ 375,000.00
550.1	STRUCTURAL STEEL (F)	LB	192000	\$ 3.50	\$ 672,000.00
563.24	BRIDGE RAIL T4	LF	750	\$ 400.00	\$ 300,000.00
564.1	BRIDGE LIGHTING SYSTEM	U	1	\$ 120,000.00	\$ 120,000.00
572.4	RECONSTRUCTING MASONRY STONE SEAWALLS	LS	1	\$ 800,000.00	\$ 800,000.00
583.5	RIPRAP, CLASS V	CY	600	\$ 60.00	\$ 36,000.00
608.99	BRICK ACCENT BAND	SY	200	\$ 200.00	\$ 40,000.00
609.5	RESET GRANITE CURB	LF	750	\$ 20.00	\$ 15,000.00
	MISCELLANEOUS ROADWAY				
				5% OF ABOVE TOTAL	\$ 226,500.00
				SUBTOTAL A	\$ 4,756,500.00

SECTION B - MISCELLANEOUS ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTIT	UNIT COST	COST
1008.51	ALTERATIONS & ADDITIONS AS NEEDED - MISC. LANDSCAPE	\$	25000	\$ 1.00	\$ 25,000.00
	CONTAMINATED SOILS (HANDLING AND DISPOSAL)	U	1	\$ 100,000.00	\$ 100,000.00
	PRIVATE UTILITY RELOCATIONS	U	1	\$ 100,000.00	\$ 100,000.00
	WATER MAIN REPLACEMENT	U	1	\$ 1,400,000.00	\$ 1,400,000.00
	SEWER MAIN REPLACEMENT / SEWER SIPHON	U	1	\$ 1,400,000.00	\$ 1,400,000.00
				SUBTOTAL B	\$ 7,781,500.00

SECTION C - DRAINAGE ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTIT	UNIT COST	COST
1008.31	ALTERATIONS & ADDITIONS AS NEEDED - DRAINAGE ADJ.	\$	25000	\$ 1.00	\$ 25,000.00
				SUBTOTAL C	\$ 7,806,500.00



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 01 Maplewood Avenue Bridge, Portsmouth NH
 Task: Conceptual Estimate - Bridge Replacement to Accommodate Sea Level Rise
 Calculated By: JAS Date: 10/1/2020
 Checked By: AML Date: 10/14/2022

CONCEPTUAL ESTIMATE

MAPLEWOOD AVENUE BRIDGE REPLACEMENT

SECTION D - TRAFFIC CONTROL

ITEM NO.	DESCRIPTION	UNIT	QUANTIT	UNIT COST	COST
619.1	MAINTENANCE OF TRAFFIC	U	1	\$ 50,000.00	\$ 50,000.00
SUBTOTAL D					\$ 7,856,500.00

SECTION E - EROSION AND SEDIMENT CONTROL

EROSION, SEDIMENT, AND POLLUTION CONTROL (HAY BALES, SILT FENCE, SWPPP, TEMP. WATER POLL. CONTROL, ETC.)	30% OF DRAINAGE			\$	7,500.00
SUBTOTAL E					\$ 7,864,000.00

SECTION F - MOBILIZATION AND CONTINGENCIES

MOBILIZATION	10%			\$	786,400.00
SUBTOTAL F					\$ 8,650,400.00

ROUNDED CONSTRUCTION SUBTOTAL:	\$	8,651,000.00
CONTINGENCY 15%	\$	1,298,000.00
ROUNDED CONSTRUCTION TOTAL	\$	9,950,000.00

CONSTRUCTION ENGINEERING	10%	\$	995,000.00
DESIGN ENGINEERING	12%	\$	1,194,000.00
WETLAND IN-LIEU MITIGATION FEE		\$	25,000.00
RIGHT OF WAY ACQUISITION		\$	30,000.00
INFLATION (11 YEARS)	2.8%	\$	4,319,424.21

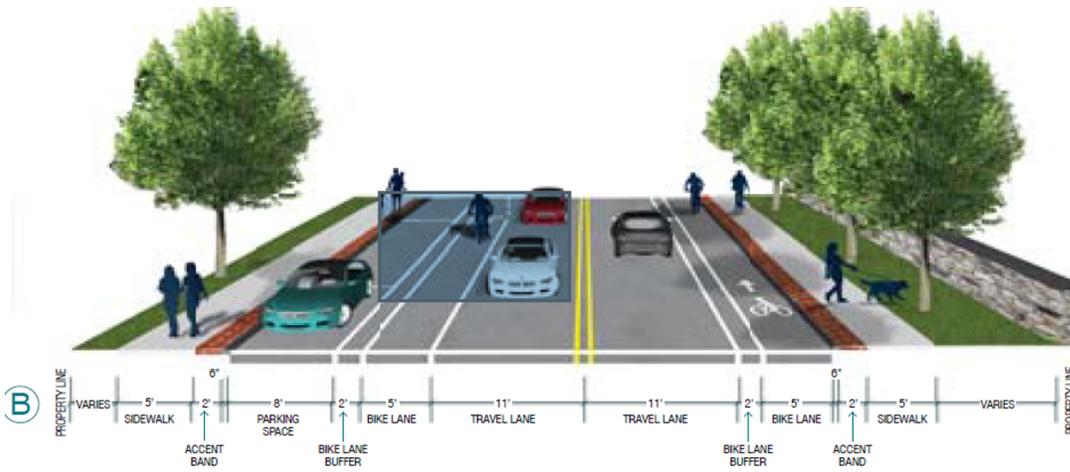
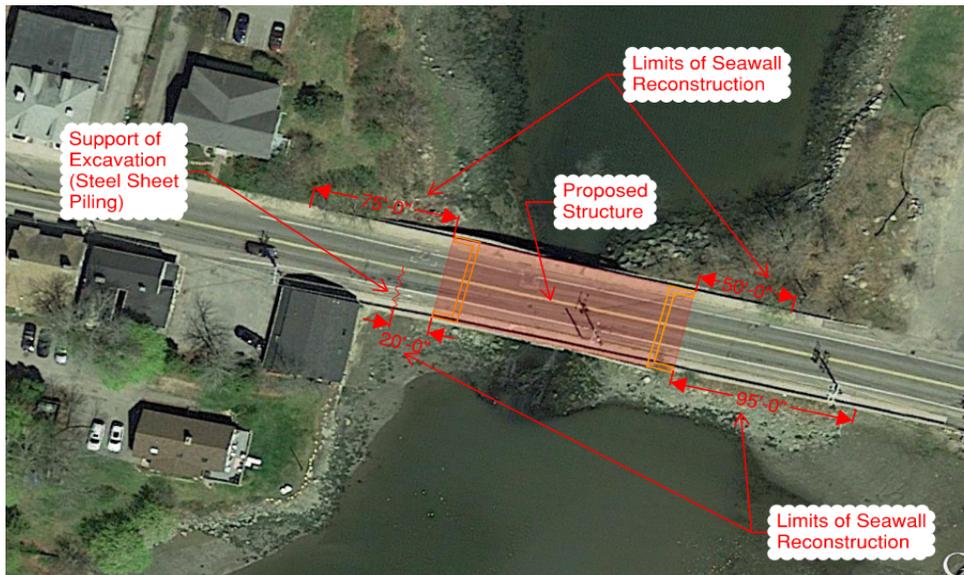
ROUNDED PROJECT TOTAL COSTS (CON, ROW, PE)	\$	16,520,000.00
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CONCEPTUAL ESTIMATE - ASSUMPTIONS

This Conceptual Engineer's Estimate of Probable Construction Costs is based on the anticipated scope of work, as well as Hoyle Tanner's experience with similar projects and understanding of current industry trends. The estimate has not been based on a final design for this project, and as such, it is intended to be preliminary in nature. It should be noted that changes in material or labor costs in the construction industry could impact the project cost in either direction. Assumptions used for this estimate are listed below.

- Existing culvert to be replaced with a new 100' single span bridge on pile supported abutments.
- Typical section to tie-in with City's streetscape project in approaches; 54' bridge out-to-out width.
- Seawall reconstruction in each quadrant (75', 50', 95', 20') with total length of 240 LF.
- Concrete rail support slabs required in approaches for bridge rail in areas with seawalls.
- Complete closure with detour during construction (no vehicular or pedestrian accommodations).
- Allowance of \$100k included for the handling & disposal of contaminated soils.
- Landscape / ornamental features incorporated to match adjacent streetscape projects.
- Sewer replacement with new siphon system is necessary to remove exist. Sewer main from hydraulic opening.
- Water main replacement includes new main under new streambed and in roadway to project limits in each approach.
- Roadway profile and bridge to be adjusted as necessary to accommodate future sea level rise (profile TBD).
- Cost for relocating existing OH utilities underground is included.





**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 08 NH 108 @ NH 33, Stratham NH
 Task: Conceptual Estimate - Intersection Reconfiguration to Remove Traffic Circle
 Calculated By: JFMS Date: 10/11/2022
 Checked By: SBH Date: 10/17/2022

CONCEPTUAL ESTIMATE

NH 108 @ NH 33 Intersection Reconfiguration to Remove Traffic Circle

SECTION A - MAJOR ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTIT	UNIT COST	COST
201.1	CLEARING AND GRUBBING (F)	A	1.25	\$ 20,000.00	\$ 25,000.00
203.1	COMMON EXCAVATION	CY	13900	\$ 15.00	\$ 208,500.00
203.6	EMBANKMENT-IN-PLACE (F)	CY	6550	\$ 15.00	\$ 98,250.00
304.1	SAND (F)	CY	3450	\$ 30.00	\$ 103,500.00
304.2	GRAVEL (F)	CY	3750	\$ 30.00	\$ 112,500.00
304.3	CRUSHED GRAVEL (F)	CY	5600	\$ 35.00	\$ 196,000.00
403.11XXX	HBP-VARIOUS, MACHINE METHOD, HIGH STRENGTH, QC/QA TIER 2	TON	4550	\$ 105.00	\$ 477,750.00
403.12	HBP-HAND METHOD (DRIVEWAYS)	TON	890	\$ 175.00	\$ 155,750.00
403.16	PAVEMENT JOINT ADHESIVE	LF	21000	\$ 2.00	\$ 42,000.00
410.22	ASPHALT EMULSION FOR TACK COAT	GAL	1300	\$ 7.50	\$ 9,750.00
417	COLD PLANING BITUMINOUS SURFACES	SY	17000	\$ 4.00	\$ 68,000.00
606.1255	BEAM GUARDRAIL (TERMINAL UNIT TYPE EAGRT, TL 2) (STEEL POST)	U	8	\$ 4,000.00	\$ 32,000.00
606.18001	31" W-BEAM GUARDRAIL W/8" OFFSET BLOCK (STEEL POST)	LF	900	\$ 30.00	\$ 27,000.00
608.24	4" CONCRETE SIDEWALK (F)	SY	7600	\$ 60.00	\$ 456,000.00
608.26	6" CONCRETE SIDEWALK (F)	SY	165	\$ 65.00	\$ 10,725.00
608.38	8" REINFORCED CONCRETE SIDEWALK	SY	275	\$ 90.00	\$ 24,750.00
609.01	STRAIGHT GRANITE CURB	LF	8475	\$ 37.00	\$ 313,575.00
609.01187	STRAIGHT GRANITE CURB, 18" HIGH WITH 3" ROUNDED EDGE	LF	665	\$ 40.00	\$ 26,600.00
609.216	STRAIGHT GRANITE SLOPE CURB 6" HIGH	LF	1600	\$ 37.00	\$ 59,200.00
628.2	SAWED BITUMINOUS PAVEMENT	LF	14850	\$ 4.00	\$ 59,400.00
	MISCELLANEOUS ROADWAY			10% OF ABOVE TOTAL	\$ 250,625.00
				SUBTOTAL A	\$ 2,756,875.00

SECTION B - MISCELLANEOUS ITEMS

SIGNS, MARKINGS, LOAM/HUMUS, ETC.	10%	\$ 275,687.50
	SUBTOTAL B	\$ 3,032,562.50

SECTION C - DRAINAGE ITEMS

PIPES, UNDERDRAIN, CB's, MH's, ETC.	20%	\$ 606,512.50
	SUBTOTAL C	\$ 3,639,075.00

SECTION D - TRAFFIC CONTROL

ITEM NO.	DESCRIPTION	UNIT	QUANTIT	UNIT COST	COST
618.61	UNIFORMED OFFICERS WITH VEHICLE	\$	200000	\$ 1.00	\$ 200,000.00
618.7	FLAGGERS	HR	3000	\$ 45.00	\$ 135,000.00
619.1	MAINTENANCE OF TRAFFIC	U	1	\$ 120,000.00	\$ 120,000.00
	MISCELLANEOUS TRAFFIC CONTROL			10% OF ABOVE TOTAL	\$ 45,500.00
				SUBTOTAL D	\$ 4,139,575.00

SECTION E - EROSION AND SEDIMENT CONTROL

EROSION, SEDIMENT, AND POLLUTION CONTROL (HAY BALES, SILT FENCE, SWPPP, TEMP. WATER POLL. CONTROL, ETC.)	30% OF DRAINAGE	\$ 181,953.75
	SUBTOTAL E	\$ 4,321,528.75



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 08 NH 108 @ NH 33, Stratham NH
 Task: Conceptual Estimate - Intersection Reconfiguration to Remove Traffic Circle
 Calculated By: JFMS Date: 10/11/2022
 Checked By: SBH Date: 10/17/2022

CONCEPTUAL ESTIMATE

NH 108 @ NH 33 Intersection Reconfiguration to Remove Traffic Circle

SECTION F - ADDITIONAL ITEMS

Landscaping (Commercial / Residential Sites)	\$	50,000.00
Landscaping (Roundabout)	\$	10,000.00
Demo 7' x 7' x 50' box culvert under NH 108 SB	\$	50,000.00
Demo 9' x 8' x 64' box culvert under NH 33 WB	\$	50,000.00
Dam Replacement & Relocation	\$	250,000.00
Install 19' x 8' x 150' box culvert or rigid frame under southern approach to proposed roundabout	\$	800,000.00
SUBTOTAL F	\$	5,531,528.75

SECTION G - MOBILIZATION AND CONTINGENCIES

ROADWAY MOBILIZATION	10%	\$	553,152.88
SUBTOTAL G		\$	6,084,681.63
			ROUNDED CONSTRUCTION SUBTOTAL: \$ 6,085,000.00
			CONTINGENCY 15% \$ 913,000.00
			ROUNDED CONSTRUCTION TOTAL \$ 7,000,000.00
			CONSTRUCTION ENGINEERING 10% \$ 700,000.00
			DESIGN ENGINEERING 15% \$ 1,050,000.00
			RIGHT OF WAY ACQUISITION \$ 40,000.00
			INFLATION (11 YEARS) 2.8% \$ 3,120,037.70
			ROUNDED PROJECT TOTAL COSTS (CON, ROW, PE) \$ 12,000,000.00



CONCEPTUAL ESTIMATE - ASSUMPTIONS

This Conceptual Engineer's Estimate of Probable Construction Costs is based on the anticipated scope of work, as well as Hoyle Tanner's experience with similar projects and understanding of current industry trends. The estimate has not been based on a final design for this project, and as such, it is intended to be preliminary in nature. It should be noted that changes in material or labor costs in the construction industry could impact the project cost in either direction. Assumptions used for this estimate are listed below.

1. Layout will match layout for Alternative #2 from 2010 Stratham Town Center District Study by GPI
Limits of work along NH 108 are anticipated to be from 350' north of Millbrook Drive to 400' south of French Lane (total 2000'); Limits of work along NH 33 are anticipated to be from 350' north of Millbrook Drive to 500' west of Winnicutt Road; The Winnicutt Road intersection shown in the Alternative 2 will not be included
1. Full depth construction will be required for the roundabout and for approach work within 100' of it
2. Typical section for circulatory roadway and full depth approaches will be:
 - 1.5" High Strength Surface, QC/QA Tier 2
 - 2.5" High Strength Binder, QC/QA Tier 2
 - 2.5" Base, QC/QA Tier 2
 - 12" Crushed Gravel, 12" Gravel, 12" Sand
3. Truck apron will be 8" Reinforced Concrete Sidewalk
4. Center island will be landscaped
5. Center island and approach curbing will be straight granite curb;
Circulatory roadway curbing will have rounded edge
6. Splitter islands will be raised using 6" high slope curb and will be surfaced with 6" Concrete Sidewalk
7. Step-Box Widening will be used to widen pavement as needed outside of full depth limits
Step box materials for NH 108 & NH 33 will follow NHDOT 12'-4' typical
[1.5" Surface Pave, 4.5" Binder Pave, 12" Crushed Gravel, 12" Gravel, 12" Sand]
Step box materials for dead-end cul-de-sac will follow Stratham Road Cross Section
[1.5" Surface Pave, 2.5" Binder Pave, 6" Crushed Gravel, 12" Gravel]
Step Box will begin 3' in from existing EP
8. Minimal change in profile grade for existing road surfaces; Anticipate roundabout circulatory roadway will be average 1' above existing grade
9. Anticipate removal of two box culverts under roadway and existing dam in northern quadrant;
New box culvert (19' x 8' x ~150' long) just south of roundabout and new dam
The existing culvert on the southeast leg is anticipated to remain.
10. Existing asphalt not already being excavated for roundabout construction (including discontinued roadway) will be removed, and revegetated with loam and turf establishment; aggregate subbase will remain
11. Cold plane & overlay 1.5" existing pavement to remain to revise striping
12. New 8' curbed concrete sidewalk (4" concrete w/ 6" crushed gravel) will be installed along both sides of road within project limits including dead-end road
13. Environmental permitting is anticipated for impacts to Mill Brook and dam
14. Temporary and permanent R.O.W. impacts are anticipated; Anticipated costs are included
15. Topographic survey of the project limits will be required
16. Traffic cannot be detoured; Construction will be phased to maintain traffic throughout duration
No temporary signal anticipated
17. No utility (water/sewer/gas) adjustments or relocations are anticipated; No costs have been included
18. Utility pole relocation is anticipated; To be performed by others, no costs included
19. Intersection of NH 108 and dead-ended street will be stop-controlled, not signalized
20. Impacts to driveways are anticipated to be limited to 10'
[Residential Drives 3" hand method, 8" crushed gravel]
[Commercial Drives 3" hand method, 12" crushed gravel]
21. ROW Impacts have the following costs: Takings = \$10/SF, Perm Ease = \$5/SF, Temp Ease = \$3/SF



HOYLE TANNER

PROJECT NO. _____ SHEET ____ OF ____

PROJECT DESCRIPTION _____

TASK _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

Use cost estimate information from Vtrans WE-12 project, Bridge #87 to develop concept-level cost for culvert replacement.
 Assume proposed box culvert matches the 19' span, 10' rise of BR 87, but use length of 150' vs. 87' for BR 87.
 Multiply item costs from BR 87 Estimate Report for length-based culvert items by a ratio of 150/87 = 1.72 (say ratio of 2.0 to be conservative)

Item No.	Description	Cost	Adjustment		Adusted Cost
			Factor		
529.15	Removal of structure	\$ 10,000	0		\$ -
Culvert removal estimated separately on summary sheet					
540.10	Precast concrete structure	\$ 330,000	2		\$ 660,000
2.0 length adjustment factor					
613.06	Stone fill, stream bed material	\$ 19,500	2		\$ 39,000
2.0 length adjustment factor					
613.10	Stone fill, Type I	\$ 1,263	1		\$ 1,263
Assume this item is for inlet/outlet protection and does not get adjusted for culvert length					
613.12	Stone fill, Type III	\$ 6,567	1		\$ 6,567
Assume this item is for inlet/outlet protection and does not get adjusted for culvert length					
649.31	Geotextile under stone fill	\$ 765	1		\$ 765
Assume this item is for inlet/outlet protection and does not get adjusted for culvert length					
900.645	Temporary relocation of stream	\$ 77,000	0.5		\$ 38,500
Assume water diversion will be simplified by building new culvert offline and constructing new dam while existing culverts/dam remain in service					
900.670	Precast concrete wingwall	\$ 104,250	0.5		\$ 52,125
Only downstream wingwall is required; upstream wingwall not necessary because culvert inlet will be integral with new dam and cost covered under dam item					
SUBTOTAL					\$ 798,220



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 05 US 1 (Lafayette Rd), Hampton NH
 Task: Conceptual Estimate - Profile Raise to Accommodate Sea Level Rise
 Calculated By: CKC Date: 10/11/2022
 Checked By: JFMS Date: 10/13/2022

CONCEPTUAL ESTIMATE

US 1 (Lafayette Road) Profile Raise to Accommodate Sea Level Rise

SECTION A - MAJOR ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
203.1	COMMON EXCAVATION	CY	20300	\$ 20.00	\$ 406,000.00
203.6	EMBANKMENT-IN-PLACE (F)	CY	7400	\$ 15.00	\$ 111,000.00
304.1	SAND (F)	CY	3300	\$ 30.00	\$ 99,000.00
304.2	GRAVEL (F)	CY	3150	\$ 30.00	\$ 94,500.00
304.3	CRUSHED GRAVEL (F)	CY	3000	\$ 35.00	\$ 105,000.00
304.35	CRUSHED GRAVEL FOR DRIVES	CY	975	\$ 40.00	\$ 39,000.00
403.11XXX	HBP-VARIOUS, MACHINE METHOD	TON	2520	\$ 100.00	\$ 252,000.00
403.12	HBP-HAND METHOD (DRIVEWAYS)	TON	515	\$ 175.00	\$ 90,125.00
403.16	PAVEMENT JOINT ADHESIVE	LF	12500	\$ 2.00	\$ 25,000.00
410.22	ASPHALT EMULSION FOR TACK COAT	GAL	465	\$ 7.50	\$ 3,487.50
417	COLD PLANING BITUMINOUS SURFACES	SY	635	\$ 10.00	\$ 6,350.00
606.1255	BEAM GUARDRAIL (TERMINAL UNIT TYPE EAGRT, TL 2) (STEEL POST)	U	6	\$ 4,000.00	\$ 24,000.00
606.18001	31" W-BEAM GUARDRAIL W/8" OFFSET BLOCK (STEEL POST)	LF	1300	\$ 30.00	\$ 39,000.00
	MISCELLANEOUS ROADWAY			10% OF ABOVE TOTAL	\$ 129,446.25
				SUBTOTAL A	\$ 1,423,908.75

SECTION B - MISCELLANEOUS ITEMS

SIGNS, MARKINGS, LOAM/HUMUS, ETC.	10%	\$ 142,390.88
	SUBTOTAL B	\$ 1,566,299.63

SECTION C - DRAINAGE ITEMS

PIPES, UNDERDRAIN, CB's, MH's, ETC.	10%	\$ 156,629.96
	SUBTOTAL C	\$ 1,722,929.59

SECTION D - TRAFFIC CONTROL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
606.417	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL	LF	2700	\$ 30.00	\$ 81,000.00
618.7	FLAGGERS	HR	4100	\$ 45.00	\$ 184,500.00
619.1	MAINTENANCE OF TRAFFIC	U	1	\$ 120,000.00	\$ 120,000.00
	MISCELLANEOUS TRAFFIC CONTROL			10% OF ABOVE TOTAL	\$ 38,550.00
				SUBTOTAL D	\$ 2,146,979.59

SECTION E - EROSION AND SEDIMENT CONTROL

EROSION, SEDIMENT, AND POLLUTION CONTROL (HAY BALES, SILT FENCE, SWPPP, TEMP. WATER POLL. CONTROL, ETC.)	30% OF DRAINAGE	\$ 46,988.99
	SUBTOTAL E	\$ 2,193,968.58



**HOYLE
TANNER**

Project: Rockingham Planning Commission: NHDOT Ten Year Plan Conceptual Estimates
 Project No. 22.144401.01
 Location: 05 US 1 (Lafayette Rd), Hampton NH
 Task: Conceptual Estimate - Profile Raise to Accommodate Sea Level Rise
 Calculated By: CKC Date: 10/11/2022
 Checked By: JFMS Date: 10/13/2022

CONCEPTUAL ESTIMATE

US 1 (Lafayette Road) Profile Raise to Accommodate Sea Level Rise

SECTION F - ADDITIONAL ITEMS

Landscaping (Commercial Property)	\$	30,000.00
Reconstruct Existing Bridge (~80')	\$	3,040,000.00
Construct New Bridge (1,240')	\$	37,960,000.00
SUBTOTAL F	\$	43,223,968.58

SECTION G - MOBILIZATION AND CONTINGENCIES

ROADWAY MOBILIZATION	10%	\$	4,322,396.86
SUBTOTAL G			\$ 47,546,365.43

ROUNDED CONSTRUCTION SUBTOTAL:	\$	47,547,000.00
CONTINGENCY	15%	\$ 7,133,000.00
ROUNDED CONSTRUCTION TOTAL		\$ 54,680,000.00

CONSTRUCTION ENGINEERING	10%	\$	5,468,000.00
DESIGN ENGINEERING	10%	\$	5,468,000.00
WETLAND IN-LIEU MITIGATION FEE		\$	85,000.00
RIGHT OF WAY ACQUISITION		\$	27,000.00
INFLATION (11 YEARS)	2.8%	\$	23,300,186.00

ROUNDED PROJECT TOTAL COSTS (CON, ROW, PE)			\$ 89,030,000.00
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CONCEPTUAL ESTIMATE - ASSUMPTIONS

This Conceptual Engineer's Estimate of Probable Construction Costs is based on the anticipated scope of work, as well as Hoyle Tanner's experience with similar projects and understanding of current industry trends. The estimate has not been based on a final design for this project, and as such, it is intended to be preliminary in nature. It should be noted that changes in material or labor costs in the construction industry could impact the project cost in either direction. Assumptions used for this estimate are listed below.

1. Project limits: 300' S of Tidal Crossing 22 to 50' S of NB/SB diverge vegetated median [2,660 LF Total]
2. Existing 30' bridge (Tidal Crossing 22) will be reconstructed to new profile (assume width increased to 80')
3. New 1,240' long bridge will be constructed to elevate road between commercial properties
4. 1,340 LF of roadway reconstruction
5. Average 4' profile raise for 840 LF of road plus bridges; 250' transition to existing grade at limits
6. Typical section will consist of removing existing pavement, concrete, and gravel, raise road with fill, then construct new road box
7. Anticipate existing road box is 5" bituminous asphalt, 7" concrete pavement, 6" gravel
8. Proposed US 1 box materials will follow NHDOT 12'-4' typical
[1.5" Surface Pave, 4.5" Binder Pave, 12" Crushed Gravel, 12" Gravel, 12" Sand]
9. All driveway area within 40' of edge of pavement will be reconstructed per standard detail
[Residential Drives 3" hand method, 8" crushed gravel]
[Commercial Drives 3" hand method, 12" crushed gravel]
10. Anticipate guardrail along SB EP for entire project length; Mix of bridge rail/highway rail
11. Anticipate guardrail along NB EP at reconstructed bridge and across marsh between businesses;
Mix of bridge rail/highway rail
12. Utility Pole Relocation (By Others) will be required; Costs not included
13. Utility (Water/Sewer) work is not anticipated and is not included in this estimate
14. Temporary R.O.W. impacts are anticipated; Anticipated costs are included
Relocations of structures is not anticipated or proposed
15. Traffic cannot be detoured during construction, will maintain minimum one-way alternating traffic during day using phased construction; Anticipate two-way traffic overnight
No temporary signal is anticipated
16. Unit price used for excavation is elevated to account for anticipated unsuitable materials
17. Taylor River Bridge is assumed to be single span, not aesthetically unique
18. Existing lane use and roadway width will be perpetuated
19. ROW Impacts have the following costs: Takings = \$10/SF, Perm Ease = \$5/SF, Temp Ease = \$1/SF
20. New 1,240' bridge will utilize 3-phases to maintain two lanes of traffic at all times
21. New 1,240' bridge will not have free board requirements for future sea level rise; Conceptual cost adjusted to handle buoyancy effects during flood events



PROJECT NO. _____ SHEET ____ OF ____

PROJECT DESCRIPTION _____

TASK _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

Determine a square foot cost for the new 80' long bridge using historic bid data from similar bridge construction projects:

Recent projects of similar size, scale, and scope:

Project	Bid Date	Length (ft)	Out-to-Out (ft)	Deck Area (SF)	Bridge Cost	Deck Area Cost	Escalated Deck Cost (to 2022)
MaineDOT Bridgewater	10/26/2022	66	53	3482	\$ 2,152,000	\$ 618.12	\$ 618.12
Based on Engineer's Estimate (released for bidding on 10/5/2022); NEXT-F beams; includes removal of existing structure; on-site temp detour bridge (not staged construction)							
MaineDOT Gorham	12/1/2019	135	35	4770	\$ 2,145,000	\$ 449.73	\$ 513.21
Welded plate girders; includes removal of existing structure; on-site temp detour bridge (not staged construction)							
AVERAGE ESCALATED SF COST:						\$	565.67

The following modifications are necessary to the bid data:

1.15	Increase costs by 15% to account for staged construction vs. on-site temporary detour bridge
1.05	Increase costs by 5% to account for deeper foundation elements (thick layer of marine clay is assumed, though historic plans for adjacent bridge indicate bedrock may be shallow so this is conservative)
1.05	Increase cost by 5% for regional cost escalation (Seacoast NH vs. ME)
1.27	Effective cost modification factor

Modified escalated average SF cost: \$ 717.20

Total bridge length:	80 feet
Roadway typical section:	50 feet
Brush curb width:	1.5 feet
Total bridge width:	53 feet
Bridge deck area:	4240 square feet
Concept-Level Bridge Cost:	\$ 3,040,000



PROJECT NO. _____ SHEET ____ OF ____

PROJECT DESCRIPTION _____

TASK _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

Determine a square foot cost for the new 1240' long bridge using historic bid data from similar bridge construction projects:

The following bid data was collected for MassDOT project #609434, Jefferson St. over Sucker Brook (Fall River, MA) in September, 2022:

Project	Bid Date	Deck Area	Bridge Cost	Deck Area Cost	Escalated Deck Cost (to 2022)
MaineDOT Waterboro & Limerick, ME	2016	5,600 SF	\$2,344,147	\$418.60	\$664
NHDOT Lancaster, NH – Guildhall, VT	2018	18,800 SF	\$9,236,473 ¹	\$494.00	\$672
NHDOT Peterborough, NH	2021	11,160 SF	\$5,839,119 ^{1,2}	\$523.20	\$565

Notes:

1. Cost associated with removal of existing bridge was omitted.
2. This project was staged construction. Cost was reduced by 30% to remove this premium.

These are relatively small bridges as compared to the proposed crossing; however, use this data as a starting point for this concept-level estimate.

The following modifications are necessary to the bid data:

1.3	Increase costs by 30% to account for staged construction (i.e. adding back the cost reduction applied to NHDOT Peterborough in the table above)
1.05	Increase costs by 5% to account for deep foundation elements (thick layer of marine clay is assumed, though historic plans for adjacent bridge indicate bedrock may be shallow so this is conservative)
1.15	Increase costs by 15% to account for a higher ratio of substructure elements to deck area than these go-by projects (9-11 piers for this project vs. 1 to 3 for sample projects)
0.95	Reduce cost by 5% to account for shallower superstructure elements for the shorter spans of the subject project
0.9	Reduce cost by 10% to account for less complicated water diversion (much of construction will be in the dry with no dewatering necessary)
0.8	Reduce cost by 20% to account for economy of scale (subject bridge is significantly longer and wider than the go-by projects)
1.07	Effective cost modification factor

Average escalated SF cost from three projects listed above: \$ 633.67

Modified escalated average SF cost: \$ 680.37

Total bridge length:	1240 feet
Roadway typical section:	42 feet
Brush curb width:	1.5 feet
Total bridge width:	45 feet
Bridge deck area:	55800 square feet

Concept-Level Bridge Cost: \$37,960,000

